JOURNAL
OF THE
AMERICAN VETERINARY MEDICAL ASSOCIATION

In This Issue

(Contents continued on ad pages 2 and 4)

Volume CXV SEPTEMBER 1949 Number 870

Journal of the American Veterinary Medical Association

CONTENTS

(*Continued from Cover*)

SURGERY AND OBSTETRICS

CLINICAL DATA

NUTRITION

$7.50 per annum Foreign $8.00: Canada $8.00 Single Copies 75 cts. prepaid in U. S.

Published monthly at 600 S. Michigan Ave., Chicago, Ill., by the American Veterinary Medical Association. Entered as second class matter August 10, 1932, at the Post Office at Chicago 5, Illinois, under the act of March 3, 1879. Additional entry at Mendota, Ill. Accepted for mailing at special rate of postage provided for in Section 538, act of February 28, 1925, authorized August 10, 1932. Reprints should be ordered in advance. Prices will be quoted after publication. Please send prompt notice of change of address, giving both old and new. Advise whether the change is temporary or permanent. Address all correspondence to American Veterinary Medical Association.

canine eczemas

due to FATTY ACID DEFICIENCY

respond to

EPITONE

PITMAN-MOORE

- Most commercial dog foods today are low in fats (less than 2%). This is necessary to prevent rancidity and loss of vitamin content.
- Dogs, cats and many fur-bearing animals, reared on a diet deficient in fats—notably the essential unsaturated fatty acid, linoleic acid—develop a chain of distressing symptoms, including a scaly form of eczema.
- Epitone, Pitman-Moore, added to the feed, supplies the deficiency in linoleic acid, in an acceptable, palatable powder. It also includes dried yeast as an appetite stimulant, B complex supplement and protein base of high nutritional value.

ACCEPTABILITY—Most dogs relish Epitone. All owners like to administer it, because it avoids messy oily liquids, and difficult-to-administer capsules.

FORMULA:

Each avoir. oz. contains:

Fatty Acids (edible)	87.5 grs. (5.67 Gm.)
Powdered Brewer's Dried Yeast	87.5 grs. (5.67 Gm.)
Inert Ingredients (edible)	262.5 grs. (17.01 Gm.)

DOSE: For treatment—dog, per 20 lbs. body weight, 2 or more heaping teaspoonfuls daily, mixed in the feed. As dietary supplement, 1 to 2 heaping teaspoonfuls daily mixed in feed.

Supplied in 12-oz. cans and 25 lb. hospital packages.

PITMAN MOORE COMPANY

PHARMACEUTICALS AND BIOLOGICAL CHEMISTS

DIVISION OF ALLIED LABORATORIES, INC., INDIANAPOLIS 6, INDIANA

Within this organization originated the policy of sales to GRADUATE VETERINARIANS, ONLY

CONTENTS—Continued

The heart of balanced feeding . . .

A food such as Gaines Meal is no mere filler . . . but a product carefully and scientifically formulated to provide adequate amounts of every food element known to be needed by a normal dog . . . plus an overage of vitamins and key minerals sufficient to offset the nutritive deficiencies of meat and other foods commonly added for increased palatability.

So make full use of the nutritional balance Gaines is designed to provide . . . and of the practical advantages offered by meal . . . look to Gaines Meal as the heart of normal, balanced feeding.

Gaines Meal for all dogs

"NOURISHES EVERY INCH OF A DOG"

A Product of General Foods

MORE FOOD
for all . . .
MORE PROFIT
for the farmer . . .
It's your problem
and ours

132 VETERINARIANS
in 8 states say . . .

Only ⅔ of Livestock Feeders Appreciate the Importance of Well-Balanced Rations

Of 132 veterinarians reporting in an impartial survey* only 67 per cent reported that livestock feeders in their locality were sufficiently well-informed to appreciate the importance of feeding a well-balanced ration.

The Ralston Purina Company has proven feeding programs developed from more than 55 years' experience in feed research . . . and manufacturing. Our Purina Dealers and their salesmen hold hundreds of dealer-customer educational meetings yearly . . . to bring livestock men the facts about balanced rations.

When you find your clients feeding Purina Chows, you'll know your Animal Health Program is supported by good nutrition . . . and sound feeding advice.

**Report by Dr. C. D. Van Houweling, Director of Professional Relations, AVMA, before Midwest Feed Mfg. Assn., February 17 and 18, 1949.*

RALSTON PURINA COMPANY
St. Louis 2, Missouri

WORKING TOGETHER FOR A PROSPEROUS AGRICULTURE

Your Public Relations . . . .

EVERY day in the year, this nation-wide campaign is at work for YOU . . . telling the public the story of the veterinary profession, and what YOUR services mean to the animal owner, the community, and nation.

At the left is another of the many advertisements reaching over 6,000,000 readers per insertion. In addition, this continuous campaign includes:

Newspapers	**Radio**
Motion Pictures	**Farm Journals**
Cartoons	**Illustrated Features**

Only through the contributions of the companies listed below is this campaign made possible. Please remember them, when you place your orders.

Associated Serum Producers, Inc.

Allied Laboratories, Inc.
Blue Cross Serum Co.
Corn Belt Laboratories, Inc.
Fort Dodge Laboratories, Inc.
Grain Belt Supply Co.
Jensen-Salsbery Laboratories, Inc.
Liberty Laboratories
Missouri Valley Serum Co.
Norden Laboratories
Pitman-Moore Co.
Sioux City Serum Co.
Sioux Falls Serum Co.
The Columbus Serum Co.
The Corn States Serum Co.
The Gregory Laboratory
The National Laboratories Corp.
The Royal Serum Co.
The Southwestern Serum Co.
The United Serum Co.

One APPLICATION DESTROYS MANGE MITES!

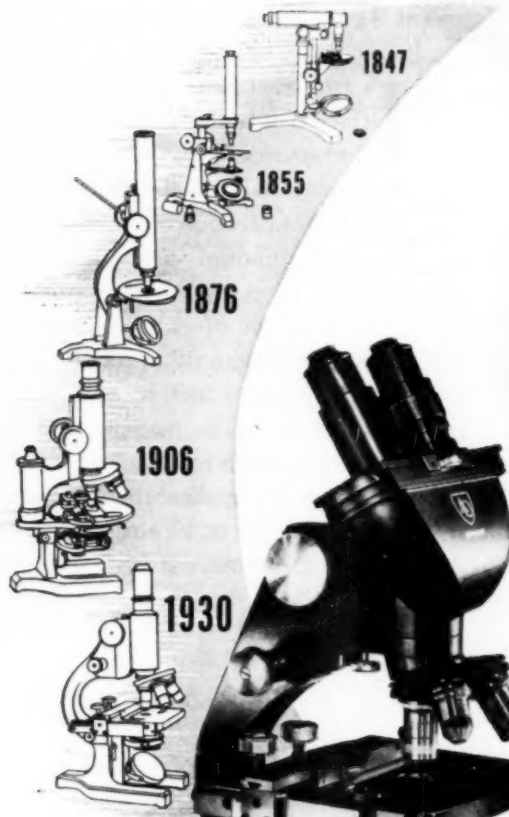
GEXANE . . . a 1% concentration of the Gamma Isomer of Hexachlorocyclohexane . . . is the newest, fastest and most powerful insecticide yet developed for the treatment of parasitic infestation. One application kills ticks . . . destroys mites, including Sarcoptes scabiei and Demodex canis . . . kills flies, fleas and lice.

Important, also, to both doctor and owner is the fact that GEXANE has no disagreeable odor, and when used as directed is non-toxic to all species of vertebrate animals, including man.

GEXANE is supplied both as a liquid in 4 oz. bottles, pints and gallons . . . and as an ointment in ¾ oz. tubes and pound jars.

Write for literature. Directions for use included with shipment.

R. J. STRASENBURGH Co.
Pioneering in Veterinary Pharmaceuticals Since 1886
ROCHESTER 4, N. Y.



and NOW...

a complete new line of Spencer Laboratory Microscopes with all the time-tested Spencer features plus these new ones . . . attached illuminator, lower positioned micrometer-screw fine adjustment with ball-bearing ways, patented inclination joint, adjustable tension of adjustment controls, "pinch grip" mechanical stage, new nosepiece with sturdy ball-and-groove spring stop, locking and keying device on substag, for improved, accurate optical alignment, dual substage controls, reduced weight and increased rigidity, and many other developments.

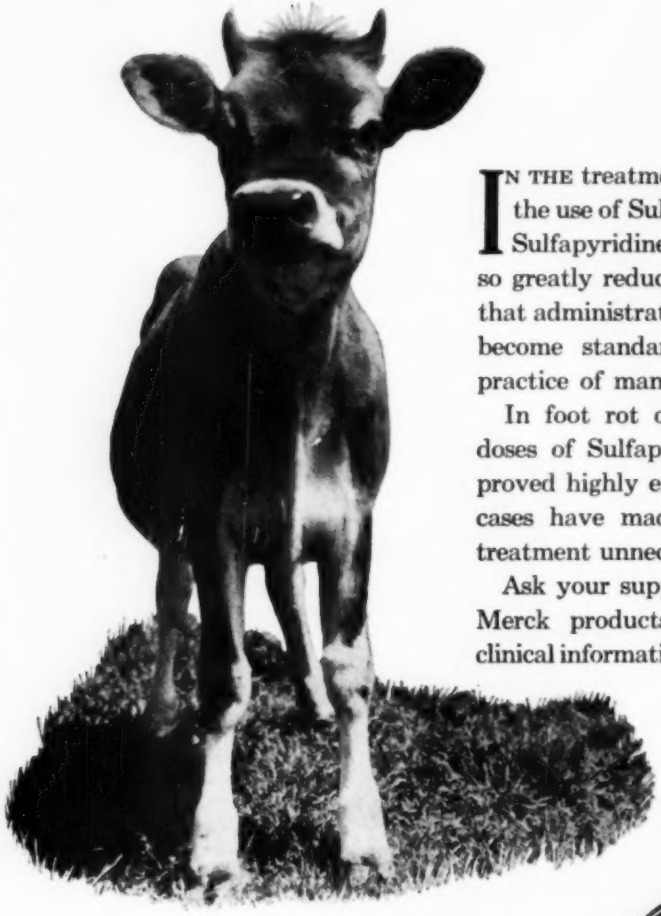
See them at your AO Distributors and ask for literature.

American Optical Company
Scientific Instrument Division
Buffalo 15, New York

Makers of Microscopes for over 100 Years

SPENCER

MERCK... A Leader in Sulfonamides



IN THE treatment of calf diphtheria, the use of Sulfapyridine Merck and Sulfapyridine Sodium Merck has so greatly reduced the mortality rate that administration of these drugs has become standard procedure in the practice of many veterinarians.

In foot rot of cattle, intravenous doses of Sulfapyridine Sodium have proved highly effective, and in many cases have made surgery and local treatment unnecessary.

Ask your supplier about these two Merck products. Your inquiry for clinical information is cordially invited.

SULFAPYRIDINE MERCK

MERCK

SULFAPYRIDINE SODIUM MERCK

for Veterinary Use

Since the early beginnings of sulfonamide therapy, the research staffs of Merck & Co., Inc. have devoted much time and effort to the specific application of sulfonamides in the treatment of animals.

LOSSES due to pneumonia seriously affect the rearing of dairy calves. The veterinarian can greatly reduce the death rate and thereby perform a substantial economic service.

That is why numerous veterinarians treat this syndrome with Sulfathiazole Merck and Sulfathiazole Sodium Merck. They report that such therapy produces a higher percentage of recoveries, shortens the period of treatment, and keeps to a minimum the number of relapses.

These Merck products can be obtained through your regular supplier.

MERCK & CO., Inc. **RAHWAY, N. J.**

Manufacturing Chemists

OTHER MERCK PRODUCTS FOR THE VETERINARIAN:

★

Streptomycin Calcium Chloride Complex Merck

This Merck form of streptomycin assures uniform potency and minimal pain on injection.

Crystalline Penicillin G Sodium Merck

Proved useful in the treatment of bovine mastitis and certain other streptococcic and staphylococcic infections in cattle, swine, and other animals.

Riboflavin Merck

Periodic Ophthalmia in horses can be prevented by giving riboflavin daily in the feed.

Canex

This original rotenone-in-oil preparation can be used by the veterinarian to control follicular mange in dogs.

Lentin

Lentin has been found highly useful in the treatment of atonic indigestion and other digestive disturbances in cattle.

SULFATHIAZOLE MERCK

SULFATHIAZOLE SODIUM MERCK

DEPENDABLE,
NON-GRIPING

PURGATIVE

FOR ALL DOMESTIC ANIMALS

UNIFORM CHEMICAL COMPOUND, **ISTIZIN** IS RECOMMENDED BECAUSE IT IS . . .

- Effective
- Stable
- Non-griping
- Well tolerated
- Odorless
- Tasteless
- Economical
- Easy to administer

Supplied in bottles of 1 pound and five pounds of powder and in ½ oz. boluses, boxes of 24.

Literature supplied on request

WINTHROP-STEARNS

ISTIZIN

rSTIZIN, trademark reg. U. S. Pat. Off. & Canada, Brand of DANTHRON (Dihydroxy-anthraquinone) — with 5% charcoal

Winthrop-Stearns INC.
NEW YORK 13, N. Y. WINDSOR, ONT.

USE NON-PYROGENIC SUTURES

Post-op fever in clean cases can be caused by sutures—but rarely by CHAMPION non-absorbable sutures. There are two prime reasons.

1. **Champion** non-absorbable silk sutures are always sterilized by heat.

2. **Champion** non-absorbable silk sutures are not digestible, therefore, no allergenic irritating products of protein hydrolysis are released in the wound.

CHAMPION Serum-Proof Silk sutures have both advantages. Sutures designed for buried suturing are dispensed on spools and have no contact with chemical irritants. Secondly, there is no enzyme in the human body capable of digesting silk. It is truly non-absorbable.

To help avoid post-op fever due to suture chemicals and protein hydrolysis, specify CHAMPION Silk Sutures. Gudebrod Bros. Silk Co., 225 W. 34th St., New York 1.

CHAMPION-PARÉ
SERUM-PROOF SILK SUTURES by Gudebrod

Also Makers of. **DERMAL, COTTON and other CHAMPION SUTURES**


. . . for the treatment of
VETERINARY
PENOVOXIL
SQUIBB
Active Colloidal Silver Oxide 5% with Cupric Oxide 2% in petrolatum base
See side panels
E.R. SQUIBB & SONS NEW YORK
VETERINARY
25 Capsules
PENOVOXIL
SQUIBB
1 Gm. Each
E.R. SQUIBB & SONS NEW YORK
SQUIBB

COLIBACILLOSIS

white scours
infectious diarrhea
enteritis in calves

PENOVOXIL SQUIBB

Because Novoxil* is useful internally as well as externally Squibb has combined the original silver oxide base with cupric oxide . . . and offers this product as Penovoxil** Capsules.

Clinical experiments over a period of years have established the value of Penovoxil in the *control of* colibacillosis (white scours, infectious diarrhea, calf enteritis). For treatment when infection is known to be present, two Penovoxil Capsules are recommended three times daily for two to five days.

Penovoxil is also indicated for calf coccidiosis, ulcerative enteritis and colitis. Penovoxil is suggested for use by both large and small animal practitioners.

Penovoxil Capsules Squibb are available to veterinarians in bottles of 25 and 100, priced at $1.05 and $3.90 respectively.

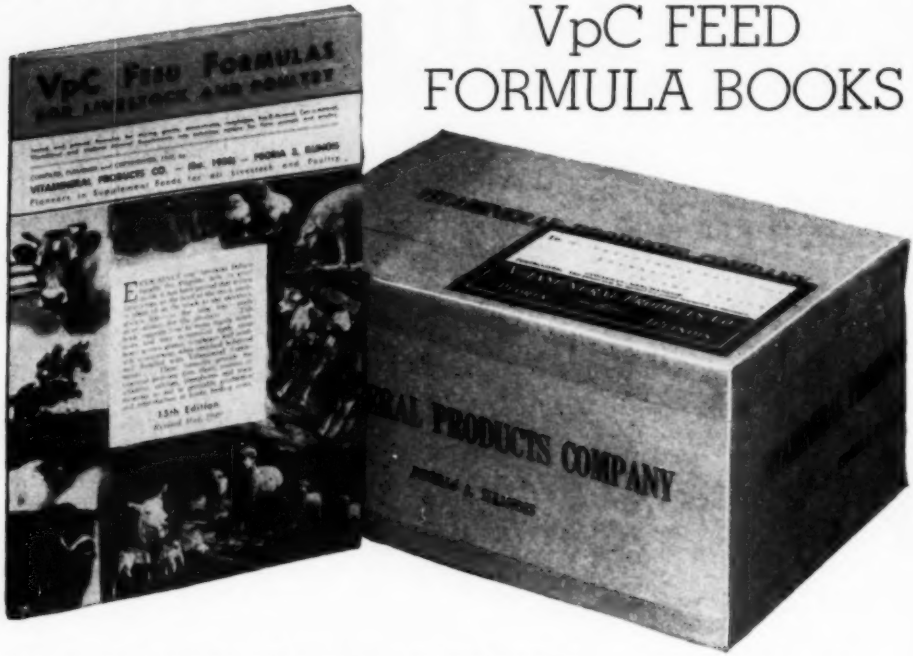
For further information, address Department AV-9, E. R. Squibb & Sons, *Veterinary and Animal Feeding Products Division,* 745 Fifth avenue, New York 22, N. Y.

*"Novoxil" is a trademark of E. R. Squibb & Sons.
**"Penovoxil" (Reg. U. S. Pat. Off.) is a trademark of E. R. Squibb & Sons.

—A NAME YOU CAN TRUST

Write for Your Package of . . .

VpC FEED FORMULA BOOKS



Your preferred clients will appreciate a copy of our new (15th edition) Feed Formula Book. Gives 20 formulae for making complete, balanced feeds (from home grains) for dairy cows, calves, beef cattle, swine, sheep and poultry. Has many useful facts on feeds and feeding; data on vitamins and trace minerals; analyses on 70 feed ingredients.

Ethically Promotes Veterinarian

Two full pages are devoted to the veterinarian and how he fits into the $10 billion livestock industry. He is mentioned 60 more times thruout the balance of the book. This latest edition gives sound facts farmers should know about the veterinarian and his profession.

Our Feed Formula Book has helped many livestock and poultry men lower feed costs, raise profits with easy to mix home made feeds.

Advertised in Farm Journals

In 3¼ million farm homes every month we are offering, free, a copy of our new Feed Formula Book. The list . . . Hoard's Dairyman, Prairie Farmer, Wallace's Farmer and Iowa Homestead, Nebraska Farmer, Wisconsin Agriculturist, The Farmer of St. Paul, Ohio Farmer.

Every advertisement specifically reads:—"Your veterinarian has, or can get for you, one of these Feed Formula Books. Ask him for your free copy."

No books will be sent direct from our office. Your clients, to get one, must ask you for a copy.

Get ready to take care of requests. Write for your prepaid package today. Whether or not you dispense Vitamineral Supplements . . . there is no obligation

VITAMINERAL PRODUCTS CO., PEORIA 3, ILLINOIS

Via-D-Mineral Con-o-mineral Viamineral Viaform

AVMA ☆ Report

Veterinary Medical Activities

✦ President C. P. Zepp, Sr., attended the Fourteenth International Veterinary Congress, August 8-12, and the sixty-seventh annual meeting of the National Veterinary Medical Association of Great Britain and Ireland, August 12-15, in London, as the official representative of the AVMA at both meetings.

★ ★ ★

✦ Now that the Detroit convention is over, plans for the Miami Beach meeting in 1950 are under way. The program committee consists of the chairman and secretary of each of the six sections, whose names will appear with the story of the Detroit meeting, and in the Roster which will be published in October. Suggestions for desirable subjects, and offers to participate, are welcomed by the program committee.

★ ★ ★

✦ President-Elect W. M. Coffee got off to an early start by representing the AVMA at the nutrition conference sponsored jointly by the Illinois State Veterinary Medical Association and the Illinois Feed Association at Peoria on September 1. Executive Secretary J. G. Hardenbergh also spoke for the Association at this conference.

★ ★ ★

✦ Student chapters were represented at Detroit by 22 students and faculty advisers from 16 schools of veterinary medicine. Those present voted in favor of a similar meeting at the next annual AVMA convention. Problems of general interest were discussed, and reports will be carried back to the respective chapters by their representatives.

★ ★ ★

✦ The first meeting of editors of veterinary publications was attended by 22 persons interested in improving the quality of veterinary literature. Called primarily for editors of state association bulletins and student journals, the wide interest shown suggests that another meeting be planned for next year, and on a wider base. A résumé of the discussion will appear with the story of the Detroit Convention.

★ ★ ★

✦ The Brucellosis Survey Project of the U.S. Public Health Service, in its third consecutive year, collected blood samples from 238 veterinarians and visitors at the Convention, reports Dr. J. H. Scruggs of Indianapolis. The samples provide information which is interesting and valuable in pointing out the precautions which practitioners should observe in protecting themselves against this disease.

★ ★ ★

✦ The conference of public relations workers of constituent associations, presided over by Dr. A. H. Quin, chairman of the AVMA committee on public relations, was attended by 26 representatives of 15 associations. The group voted unanimously to hold another conference next year at Miami Beach and to begin planning the agenda for the meeting.

★ ★ ★

✦ Interest in the brucellosis exhibit continues high. As a result of the interest evinced when this exhibit was shown at the American Medical Association meeting in Atlantic City, the U.S. Public Health Service is preparing a companion exhibit for the human field which will be shown beside it at the American Public Health Association meeting in New York, October 24-28.

★ ★ ★

✦ The panels on small animal practice, large animal practice, brucellosis research, and public health were on display at the Detroit meeting. These panels are available for use of constituent associations for their own meetings, or for display at state, county, and high school fairs. The only charge is payment of express charges back to Chicago.

Making pregnancy possible

for many cows with cystic ovaries

Is a 50 percent chance for normal pregnancy worth trying in a cow with cystic ovaries and nymphomania? This result actually was achieved by workers at the University of Wisconsin using unfractionated extract of sheep pituitary.* Of 84 cows having cystic ovaries but no tubal or uterine pathology, 42 became pregnant: *36 pregnancies resulted in the 53 cows bred following one injection of pituitary gonadotrophin, 6 more in the 16 animals treated twice.*

A total of 96 animals were given the extract. Symptoms of nymphomania which were present in 81 cows, disappeared in 72 after one injection, and recurred in only 14 under observation.

VETROPHIN, Abbott's pituitary gonadotrophin, is essentially identical with the extract used in these studies. One or two doses usually are sufficient to start normal estrus cycles. Symptom-free cows may be bred after the first or second normal heat period.

Vetrophin is supplied in 1-dose vials containing 10 rat units of desiccated sheep pituitary gland. For literature write to *Veterinary Division*, ABBOTT LABORATORIES, NORTH CHICAGO, ILLINOIS.

Vetrophin®

(PITUITARY GONADOTROPHIN, ABBOTT)

**Casida, McShan and Meyer (1944), J. Animal Sci., 3:273, August.*

BIOLOGICAL VALUES IN KENNEL FEEDING

NO. 12 MEMO FROM W. E. ARMSTRONG TO VETERINARIANS

The chemical analysis of a dog food is often wrongly interpreted by well meaning, but misinformed salesmen. Chemical analysis *does not* acceptably measure the actual food (biological) value of a dog food. If it did, we would not have maintained a kennel of purebred dogs for experimental generation test feeding.

As one dog breeder to another, let's consider "chemical analysis" in a clear light. What you want, when you buy dog food, *is something more*, for instance, than an official guarantee on the label that a brand, *analyzed chemically*, provides 15%, or 20%, or 25% protein. That is not enough! What about the other 75% of nutrients?

Protein alone, or minerals, or any other single element will not make a flyer. What counts is the *sum total* of *all* the *nutrients*... the Grand Total Results!

Many brands shout "best." The purpose of Animal Foundation is to make HUNT CLUB dog meal the best that Nutritional Science knows how to formulate. With or without added meat, fat, etc., HUNT CLUB is an excellent diet for pets. For show and trial conditions, for breeding, and for kennel standards, the HUNT CLUB recommendation for a breeders mixture stands at the top, by itself, through the 3-generation breeders test. This is the mixture in which we recommend using 1 lb. ground meat and 5 ozs. of lard with each 4 lbs. of HUNT CLUB meal, and about 4 lbs. of water.

The best test tube in the world is the long tube inside the dog from mouth to tail. We have knowledge that recently *leading brands* of dog meal were tested in these tubes inside good, purebred dogs under practical kennel conditions with careful feeding control. The results were certified by a well-known veterinarian and graduate workers. Here are some of the results as we interpret them in plain English:

1 **Biological (BV) value...** HUNT CLUB scored higher in BV than three other leading brands tested. This means greater food value per pound of meal, aid in better growth and health, promotion of sound-boned pups, and more milk from bitches.

2 **True digestibility...** HUNT CLUB scored higher than any of the other three brands in *true digestibility*. Exactly 3.5% better. That means 3.5% more food utilization, and better stools. (Also, of course, less moisture and odor in the kennel.)

3 **First in food efficiency...** As part of the same experimental program, using laboratory animals instead of dogs, it was found that HUNT CLUB also leads the other brands in weight gains as measured against food consumed.

Don't you think this offers you sufficient grounds for looking further into HUNT CLUB?

W. E. ARMSTRONG, *President*
Animal Foundation, Inc.

ANIMAL FOUNDATION, INC., Division J
Sherburne, New York

Date_____

☐ Send free sample of Hunt Club, charges paid.

☐ Explain offer to feed my kennel 30 days on a "Satisfaction or Money Back" basis.

Name_____

Address_____

City and State_____

Do you feed meat? _____

What Feeding Question Can We Answer For You?

Follow the Feeding Method of

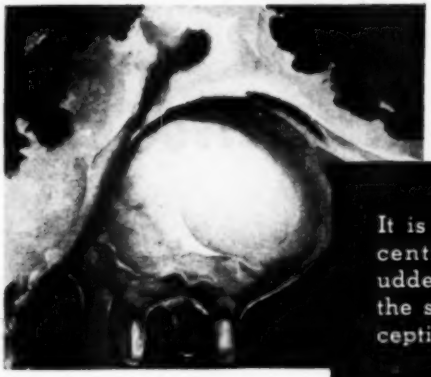
HUNT CLUB

FULL DIET dog meal

Animal Foundation, Inc., Sherburne, N. Y.

SAMPLE BAG FREE
and Money-Back Trial Offer
(East of Rocky Mountains only)

For Better Management of MASTITIS
Administer Penicillin in



PENICLE®
Antibiotic Vehicle

It is important to maintain effective concentrations of penicillin in the affected udder until all *S. agalactiae* have reached the stage of division—when they are susceptible to the drug.[1]

A single injection of penicillin-in-PENICLE establishes therapeutic levels of the drug in the lactating udder, and maintains them for at least three days or six milkings. In a majority of cases, this is sufficient time to ensure that even slowly dividing strains will be killed. In some instances, however, a second injection may be necessary after three days to destroy the penicillin-sensitive organisms which were dormant or not dividing during the first seventy-two-hour period.

PENICLE is a water-in-oil emulsion which offers outstanding advantages as a retaining vehicle in antibiotic therapy. The use of PENICLE with penicillin in the treatment of bovine mastitis due to *S. agalactiae* results in better dispersion of the drug throughout the gland, and maintenance of therapeutic levels for a longer period in the affected quarter. With PENICLE, *frequent injections are not required; control of therapy remains in the hands of the veterinarian.*

PENICLE is sold only to graduate veterinarians. You can use the soluble crystalline penicillin of your choice in PENICLE.

SUPPLIED: Bottles containing 100 cc.

SEND FOR COMPLETE LITERATURE

WALLACE LABORATORIES, INC.

53 PARK PLACE NEW YORK 8, N. Y.

1. Foley, E. J.; Stults, A. W.; Lee, S. W., and Byrne, J. V.: Am. J. Vet. Research 10: 66 (Jan.) 1949.

Journal
of the
American Veterinary Medical Association

VOL. CXV SEPTEMBER, 1949 NO. 870

The President's Address

LESLIE M. HURT

Los Angeles, California

IN ACCEPTING the presidency of the American Veterinary Medical Association, I deeply appreciated the honor which was conferred upon me, and was conscious of the responsibilities which accompany the office. These obligations I pledged myself to effect to the best of my ability.

At the end of the year, I look back and wonder where the months have flown. Time passes rapidly when one is happy and vitally interested in what one is doing.

These have been marvelous days for me. It has been the source of much pleasure to meet and fulfill, to the extent of my ability, each task presented during the year.

MEETINGS

I have attended a score or more of conferences and meetings, and regret only my inability to be in two or three places at once. Such ability would have permitted attendance at meetings of two or more associations which had selected the same or overlapping dates. Practically all invitations for AVMA representation were accepted, however. In accord with suggestions of past presidents, I have recommended that the vice-presidents and Executive Board members also share in the work of the president and the president-elect in meeting the ever-increasing demands upon them to appear before regional and state meetings and conferences. This plan can be developed and enlarged to advantage, I believe, for the benefit of all concerned and with resulting economies in the travel budget for association officers.

Each man elected to serve as a delegate in the House of Representatives and as a member of the Executive Board should meet with the constituent associations in his district at least once during his term of office—and as early and often as feasible. Generally speaking, such a man is closer to his constituents, and better able to enter into discussions of local practice problems, than any person in the AVMA office.

Dr. L. M. Hurt

The meetings I attended were almost as varied as the geography of the areas in which they were held, and yet there was

Address delivered at the Eighty-sixth Annual Meeting of the American Veterinary Medical Association, Detroit, Mich., July 11-14, 1949.

no question that they were veterinary medical meetings, and enthusiasm permeated every one. I was favorably impressed with the spirit displayed by the younger men in taking active part in programs and discussions, in accepting committee and officer assignments, and in bringing to the constituent associations the results of their recent education and training in exchange for the mature viewpoint and judgment of the older practitioners. All veterinarians are looking in the same direction—forward. For them, veterinary medicine possesses a definite unit of values, and their thinking and planning encompasses all phases of professional activity.

Attendance at meetings remained at par whether the program consisted of an hour or a section on general practice or on a specialized veterinary service. Perhaps the variety, skillfully planned by the program committee, had its effect in holding attendance, but the interest of the veterinarian is essentially general in nature. He likes to maintain contact with the whole field of practice, and he really enjoys opportunities to become acquainted with the results of research—for they all affect him more or less directly.

I asked a practitioner approaching 70 years of age, a regular attendant at local and state meetings, why he did not specialize, take it easy, and slow down a bit. He drew himself up almost to his full stature and informed me that he wasn't "old enough to specialize." A spirit like that can't be beaten! And all of us manifest this spirit in some degree when attending veterinary medical meetings. Even when we return to our duties in the various branches which make up the great field of our profession, don't we feel pretty much the same way? We are, after all, veterinarians engaged in work which brings us closer to Mother Nature and her secrets than any other profession, occupation, or field of endeavor.

SUGGESTIONS

My presidential essay, carefully and systematically boiled down, is on file with the Executive Board, where it belongs. What would be more logical than to place my views, accurately, correctly, neatly, and intelligibly on AVMA stationery and hand it to the executive secretary for presentation to the Executive Board and the House of Representatives? If, after due, careful, and judicious consideration, the Board and House see fit to approve any of the recommendations submitted, they will refer them to the editorial staff for publication. Matters which draw enough fire to appear really important will be referred to the appropriate committees to analyze, in an effort to extract some grains of wisdom and issue these in the form of committee reports. The outcome? Well, if there is anything really important and germane to the welfare of the AVMA or to veterinary medicine in general, it will eventually appear before the Board and the House as new business, and be acted upon accordingly.

During the past year, we have received resignations from members in the age bracket which we like to refer to as "well preserved." From some of these communications, we can infer that the action is taken with regret. They have certainly been accepted with regret.

The Executive Board should seriously consider a plan which may allow voluntary retirement by members after continuous membership for a period of twenty-five or more years, and/or after attaining the age of 65 (or 70), or upon grounds of physical disability sufficient to militate against continuance of active professional work.

A survey should be made, and recommendations should be ready for consideration by the Executive Board at its next session. This would allow drafting of suitable changes in the By-Laws to be submitted to the House of Representatives at its next regular meeting.

TRENDS

We seldom get close enough to any branch of biological science to see just what the cogs look like, much less learn what makes the wheels go around. We witness the almost kaleidoscopic changes of the first half of the twentieth century, but most of us get from it only trends.

In the economic readjustment during the past year, the decline in farm prices may be viewed as a favorable development, rather than otherwise. The extremes to which markets soared were engendered, to a considerable extent, by government spending. Fortunately, favorable conditions enabled the farmers of the United States to produce a series of bumper crops. The U. S. Department of Agriculture forecasts a decline of 5 per cent in 1949. Granting this, the farmer has never been in a sounder financial position, even though livestock numbers are relatively low.

Livestock prices depend, to a considerable extent, upon the amounts of hay, grain, and other feedstuffs available for animal feeding. With these commodities priced at two and three times what may be considered normal, it is notable that the prices of meats and dairy products seldom reached

double the prewar levels. A return to what might be considered normal retail prices will be delayed, even though all agree that prevailing prices are out of line.

Veterinarians and the Livestock Industry.—The veterinarians' connection with the livestock industry has become increasingly apparent and important. As the oldtimer used to say when he attended his herds and flocks at the time of calving, farrowing, and lambing, "If you don't save the babies, you can't make any money on them." Each young pig owes its owner a sack and a half of grain worth $5, and each colt and calf at least $25 worth of feed—granting that the mare and the cow made a good return in work or function for their own keep during the year.

The losses among young animals are far too heavy, and many are preventable. Each of us must keep fully acquainted with progress along the several lines of investigation, and extend our efforts to the utmost in helping farmers produce bumper crops of livestock—comparable to those in grains, fruits, and vegetables. Only in so doing may we succeed in maintaining our American standard of living, for these standards are based on liberal rations of home-grown meats and dairy products.

The International Veterinary Congress.—The theme of the Fourteenth International Veterinary Congress in London next month is "The World Food Situation," and emphasizes that human food is a critical item—and that it is worthy of serious consideration by veterinarians who protect the source of the health-protecting foods of animal origin.

Centennial Convention of A.A.A.S.—Conservation and human welfare was the undertone of the Centennial Convention of the American Association for the Advancement of Science in September, 1948, which I attended. Eminent scientists pointed out that the world's population is increasing at the rate of 1 per cent per year, whereas the world's capacity to produce food is decreasing 1 per cent per year. Why should that concern us? Because America is losing 500,000 acres of top soil per year from erosion, plus additional untold acres which are being thoughtlessly "mined" instead of intelligently farmed.

Changing Concepts of Animal Disease.—During my years in general practice, I was repeatedly confronted with baffling cases. Sometimes, these problems involved individual animals, at other times complete herds. My basic, but limited, instruction in nutrition was obtained from early courses in physiology, in feeds and feeding, and similar subjects. Slowly, but surely, I was forced to the conclusion that deficiencies were more than occasionally the cause of what was apparently a disease complex; and that borderline deficiencies might serve to devitalize animals, thus inviting infectious agents to establish themselves.

Fifty years ago, we heard of proteins, carbohydrates, and fats. We recognized the necessity of supplying the basic minerals in suitable amounts and proportions. A decade later, we were learning to calculate "available nutrients." Later, we realized that "supplements" were becoming increasingly necessary, because land that was continually cropped produced forage deficient in, or devoid of, certain essential nutrients. Trace elements were recognized, and their effect on growth, sexual development, maturity, and function were studied. All in all, carefully planned and conducted research has given us many of the answers to problems of nutrition.

Intricate studies of tissues and organs have brought us much nearer than we had ever been to a knowledge of the normal functions of the body, the biologic significance of climate and environment, and understanding of the organs and process of reproduction.

Almost daily, contributions are added to the fund of knowledge of viruses, animal and vegetable parasites (and the diseases and disorders they may produce), and the rapidly developing methods of disease control—including biological, antibiotic, and biochemical products.

The relationship that exists between infective agents of mankind and animals indicates that animals are more nearly human than we like to admit.

THE PRESENT

Less than 5 per cent of the world's population can enjoy the privilege of unlimited study and utilization of up-to-date facts and modern knowledge. Even the privilege of meeting and expressing thoughts aloud is limited to a relatively small portion of the people of the earth.

Today, the veterinarian stands guard over the welfare of America. The propagation and healthy growth of livestock are primary in the task of supplying adequate food for the people of the world. The veterinarian is honored for the work he has done to make human food plentiful.

UNRESTRICTED USE OF BIOLOGICAL PRODUCTS

My immediate predecessors believed in the conference table as a means of reaching better understanding with groups and organizations whose policies and work inter-

locked, overlapped, and sometimes conflicted with those of the AVMA and its members.

Under the heading of unfinished business is the problem of unrestricted use of biological and pharmaceutical products by untrained persons, to which a great deal of study has been given by your officers and some of our special committees. Such indiscriminate use of a number of viable vaccines and potentially dangerous drugs and chemicals is certainly detrimental to the best interests of animal food production and the livestock owners themselves. During the year, I have conferred with several executives and representatives of prominent manufacturers of the products referred to. My purpose was to acquaint these people personally and directly with the attitude of veterinarians and the reasons for feeling as they do about indiscriminate sales of biological and pharmaceutical agents through drug stores, coöperatives, hatcheries and feed stores, as well as directly to livestock owners, quacks, and peddlers of various and sundry supplies which farmers and ranchers can be induced to buy. To some extent, these executives and manufacturers realize the danger when certain drugs, chemical products, and biological agents are used by livestock owners and other persons having little or no knowledge of their potential harm or actual waste when improperly used, especially in the absence of accurate diagnosis and the know-how of disease prevention and therapy in livestock and poultry.

Many thoughtful people are agreed that a number of biological and pharmaceutical products should be administered only by veterinarians, or be released for use by the controlling government agencies only under the direction of a veterinarian. I believe that study and conferences on this whole problem should be continued until some effective measures are established, which will not only be of great benefit to livestock and poultry owners but also of real importance in the advancement of the best type of veterinary service by qualified persons, namely, graduate veterinarians.

Meat and Milk Inspection.—The Meat Inspection Division of the Bureau of Animal Industry, USDA, passes on all meat and meat products which move interstate, or approximately half of all meat produced in the nation. A few states boast an inspection service which is comparable, and some municipalities have systems of meat inspection in effect. Many areas, however, have no such inspection available.

In World War II, all of the members of our armed forces were protected more completely against dietary disorders and from exposure to diseases due to foods of animal origin than any army or navy in history. This was accomplished by inspection all the way from the source of production, through processing, storage, and shipment and up to the time of issue to each mess hall. Army and navy personnel returned home with the highest appreciation of the work of the Army Veterinary Corps. They hoped to find at least some semblance of this important health protection service in effect in their home communities, and were disappointed when efforts to obtain such services were unavailing.

The field of milk inspection receives more detailed attention. Most of the states use the so-called standard milk ordinance of the United States Public Health Service, or one patterned after it. Veterinary personnel is sadly missing from much of this important service, however, and far too many communities are dependent upon technical factory inspection and on pasteurization to insure consumers reasonable safety from milk-borne infections, with almost total disregard of the health of the dairy animals.

The AVMA frequently has recommended that its members give all possible assistance to their communities in these important fields, and has advised members to contribute liberally of their time and talents to the establishment and maintenance of local boards of health.

Brucellosis.—Brucellosis has replaced tuberculosis as "No. 1 Public Enemy." Much has been learned about control of this disease in herds and areas, but much remains to be learned about the infective agent and its adaptation to the several species of domestic animals and to man.

The work involved in conducting herd and area tests appears to many livestock owners to be largely mechanical, consisting, as it does, of identifying the animals, drawing blood samples, submitting these for test in an approved laboratory by technicians specially trained for this work, returning in due time with a report of the results of the tests, segregation and branding of reactors, and disinfecting the premises.

This procedure sounds simple, and it looks simple to the untrained. As a result, a tendency has developed in some locations to hasten the eradication program by employing laymen to collect blood samples and perform other field duties. This trend is regrettable, because it substitutes a partial service for a complete one. For efficient results, the work should be performed by men who are competent to

conduct herd studies, evaluate breeding data and production records, balance the many factors involved in disease prevention, control, and eradication, and advise owners regarding the most practical course which can be applied to the individual premises involved and under the conditions of sanitation and management available.

With this thought in mind, a committee consisting of general practitioners, with extensive experience in handling this disease, was appointed for the specific purpose of preparing recommendations to the Secretary of Agriculture bearing on the more general and more efficient utilization of practicing veterinarians in controlling brucellosis. That committee formulated suggestions for enabling practitioners to participate in all official BAI-state cooperative programs, without serious interference with the normal demands of practice.

The work of this committee was timely, and I believe that its recommendations were welcomed by the Bureau and will be favorably considered in the drafting of rules and regulations which govern field disease-eradication programs.

Many AVMA members have served the BAI in meat inspection, in tuberculosis, brucellosis, and mastitis eradication programs, and in controlling foot-and-mouth disease. There are still those among us who engaged for a time in the job of eradicating tick fever, sheep and cattle scabies, and glanders. We are all justly proud of the successful records in bringing these major plagues under control.

My thought in connection with brucellosis is that we are not confronted with something new and rapidly spreading, but an old offender with which we are just becoming well acquainted. The job of eradication should, therefore, be approached with the best talent available. When practicing veterinarians are busy, arrangements should be made to employ them to the fullest extent possible without interfering with the emergency problems of practice. Temporary utilization of federal- and state-field veterinarians is most effective and efficient when supplementing the work of practitioners, not when supplanting them. Thus was tuberculosis brought under control.

Practicing veterinarians throughout the country should make it their personal duty to assist in federal and state programs of disease control and eradication. In some instances, it may appear to occasion a temporary personal loss in time and attention to practice, but in the long run the benefit to the livestock owners will more than compensate for this.

If practicing veterinarians do not respond sufficiently to the call for duty in this field, then it will be done, even though less efficiently, by others. In that event, we will lose ground in an important phase of veterinary medical activity. Such losses are seldom regained. Regarding these national and state problems in livestock disease control, let us render a constructive and complete veterinary service.

It is well to think of our relation with the livestock industry. The members of that great segment of American agriculture have a great deal to do with the success of the institutions of veterinary medical education, and they are directly responsible for the livelihood of every general practitioner. We work for them—not they for us—except that they are important in promoting favorable legislation both at national and state levels, and especially legislation which appropriates funds.

Rabies.—The continued presence of this disease constitutes a national disgrace. Extensive research work has provided all the information needed to eradicate it. Many countries are completely free of rabies, and we have all the information which they used.

Although the dog is not necessarily the natural host of the virus, it is by far the most common cause of its spread to man and animals. We should stress the necessity of dog control and mass vaccination as disease-control measures of major importance. There is no longer any logical excuse for the recurrent outbreaks; they result from failure to institute programs known to prevent such outbreaks.

STANDING AND SPECIAL COMMITTEES

From time to time, I am told that we have too many committees. I am willing to argue this point, after making a rather critical survey of the names and functions of the committees. Time was when the criticism of too many committees might have been well directed, but veterinary medicine has made rapid strides in the last generation and the American Veterinary Medical Association has, through its committees, kept in the lead.

The standing committees have been established to consider recurring problems affecting the various branches of our profession. Each week, something new happens. These developments are interesting and valuable to AVMA members, and it is logical that proper reference be made to them in the report of a committee. There is a notable lack of duplication of effort, and the results of a year's study and accumulation of new material in any field is the

boiled-down summary published as a committee report. This makes available what is essentially a *vade-mecum* or manual for ready reference by every veterinarian working in that particular field.

Special committees are appointed for the study of specific topics or problems, or to represent the officers and members in special investigations or interassociation conferences. Detailed reports of the conference discussions are presented to the Board of Governors with condensed reports published for ready reference.

While devoting its major and primary attention to the individual and collective problems of its members, the AVMA recognizes that the nation can function on a sound and healthy basis only when all units are integrated in the interests of all the people. Accordingly, it will continue to stand on guard and vigorously oppose any unjust or detrimental legislation, and to resist bureaucratic control over the study, teaching, or practice of veterinary medicine. It will be just as diligent in securing the proper classification and remuneration for personnel eligible to fill public positions. At every opportunity, the officers and the official representatives of the AVMA will draw attention to the positions which veterinarians can and should occupy in all programs aiming at improved public health and increased supplies of the health-protecting foods of animal origin.

The development of this country to its present greatness could not have been possible without individual and economic freedom of effort. Without these rights, this past half century would have witnessed little of the pageant of progress which has unfolded. It is no accident that American farmers with their advanced technology are the most efficient producers of food and fiber in the world. As fast as new knowledge and techniques are discovered or developed in our veterinary colleges and research institutions, the information is taken to the veterinarians of America through the medium of the JOURNAL of the AVMA and the *American Journal of Veterinary Research*. Thus, we are kept acquainted with new developments and ready to apply them in our fields of practice.

We have done a remarkably good job as American veterinarians. The records of accomplishments in private practice and in federal, state, and municipal work, and of coöperation with the livestock industry, are all in our favor. Let us continue our active and enthusiastically coöperative support in all matters having to do with health and welfare, especially among domestic livestock.

Farm Bureau Serum Company Finances Research

Veterinarians will be particularly interested in a research grant made to the College of Veterinary Medicine at the University of Illinois by the Illinois Farm Bureau Serum Association. The funds are designated for the investigation of swine brucellosis, with emphasis on the development of vaccines or therapeutic measures. In the official project plans as released, the herd owners, farm advisers, and practicing veterinarians are all listed as coöperators. The amount of the grant is $5,000 a year.

The special significance of this grant is that probably it is the first instance where one of the farmer-owned serum coöperatives actively supported swine disease research with funds. "We feel that the over-all benefit which may be derived from this research certainly justifies the small investment per member that this grant represents. If this cause of undulant fever in humans and the economic losses resulting from the disease in swine could be eliminated, this could be one of the best investments our association has ever made," said C. F. Musser, manager of the Illinois Farm Bureau Serum Association.

The Status of Commercial Dog Foods

There has been steady deterioration in the quality of commercial dog foods during the past five years (1944-1948), due mainly to these factors:

1) Cutting off of imports of South American dried meat products (bone, bone meal, liver, meat scrap).

2) Much liver that formerly went into dog foods now is used in the manufacture of human medicines.

3) Brewer's yeast became scarce during the war and dog food producers quit using it.

4) Some manufacturers have been using over 10 per cent of soy products—a level too high for complete digestive-tract safety.

In view of these marginal hazards, "practically all the commercial dried foods" should be supplemented with horse liver, horse meat, or kidneys.—*C. M. McCay, Vet. News, March-April., 1949.*

During the 1940-1947 period, the number of cases of human tuberculosis in the United States increased by 33,065 and the deaths decreased by 12,364. Improved methods of diagnosis on the one hand and increased livability through better therapy on the other is the reported explanation.

A Census of Veterinarians in New York State

WINFIELD S. STONE, D.V.M.

Albany, New York

IN VIEW of the general demand for additional veterinarians in the United States, a survey was made in December, 1948, of the resident veterinarians in New York. No accurate figures were previously available as to the total number of veterinarians in the state or the type of practice in which each is engaged. The data presented here were obtained on a county-wide basis, through the coöperation of various groups,* and includes all veterinarians with the exception of those in military service. The latter number varies greatly from year to year, and no estimate of the present number or potential need is given. The pattern followed in the survey is one recommended by Olson,[1] who reported on the need for veterinarians in Nebraska, and the tables used are much the same as those which he recently published. The importance of a census at this time assumes added significance, since the state legislature has been requested to establish a second veterinary college in New York.

RESULTS OF SURVEY

There are now in New York, a total of 1,069 veterinarians. The number and per cent engaged in different types of employment are shown in table 1. An examination of the data indicates that more than 60 per cent are actively engaged in practice. A combination of large and small animal practice accounts for the majority of the group with fewer in the fields of large or small animal practice only. The survey indicates that every county in the state has more than two veterinarians, with the exception of Hamilton County, which has none. This county is located in the Adirondack Mountain region, and there is little need for continuous veterinary service, since the herds are small and the total cattle population is only 476.

New York is considered by many to be a highly industrialized state with a large population and with but few farms and a limited number of livestock. On the contrary, New York ranks high in agricultural production in the United States, and few states exceed it in total livestock value. According to figures released Jan. 1, 1949, by the U. S. Department of Agriculture, New York has 2,183,000 cattle and calves, valued at $451,674,000. Other livestock greatly increases this total, and the value of poultry in the state is estimated at $38,902,000. An examination of the age groups of all veterinarians in the state yields some interesting facts (table 2).

TABLE 1—Employment of Veterinarians in New York State, December, 1948

Classification	No.	Per cent
Practice:		
(a) Large animal	67	6.3
(b) Small animal	273	25.5
(c) Mixed	423	39.5
Regulatory service (federal, state, and county veterinarians)	139	13.0
Commercial	32	2.9
Employed by the New York State Veterinary College	48	4.7
Miscellaneous (retired, inactive, etc.)	87	8.1
Total	1,069	....

The small number in the 45 to 49 age group reflects the lowered student enrollment experienced by all veterinary colleges in the United States after World War I. A turning point in veterinary education came in 1930 and 1931, when many more students were attracted to the profession than could be accommodated by existing facilities. At that time, the college work required to earn a degree was increased from four to five years. That the profession has attracted many young men to its ranks is noted by the high percentage in the 30- to 34-year age group. Almost 45 per cent of the veterinarians in New York are less than 40 years of age.

In order to estimate the number of men needed to maintain the present total in New York, all veterinarians under 65 years of age have been arranged in 5-year age groups. The life expectancy of each group was calculated from the "commissioner's 1941 standard ordinary mortality table." In the five-year period, 1948 to 1953, 115 additional veterinarians must be added to maintain 920. During the next five-year period, it will be necessary to add 144, and in the third five-year period, 113 will be needed to maintain the total present number. Since most of the men joining the profession will be in the younger age groups, additions have been placed in the youngest age group for purposes of calculation (table 3). On the basis of this estimate, New York will require approx-

*These were the State Disease Control Veterinarians, the New York Veterinary Medical Society, Inc., and Dr. L. R. Barnes, U. S. veterinarian-in-charge at Albany.

imately 25 additional veterinarians each year to maintain the December, 1948, total. This figure is definitely conservative since it makes no allowance for transfer to work outside the profession or for retirement before the age of 65. Likewise, it does not estimate the number of men needed now to fill vacancies in practice, state and federal positions, or openings with the U. S. Public Health Service and local health departments.

VETERINARY EDUCATION IN NEW YORK

To furnish the state with veterinarians, New York has maintained its own veterinary college at Cornell University since 1897. The college has turned out classes each year since it was established and, during World War II, when the teaching program was accelerated, two classes were graduted in 1943 and in 1944. The demand for graduates in veterinary medicine has been reflected also in the number of students seeking admission to the veterinary schools in the United States. At the New York State Veterinary College, the number of applicants has exceeded many times the number that could be accepted. In 1947, there were ten times as many qualified applicants as there were places in the entering class, and in 1948, the ratio was more than 15 applicants to each one accepted.[2]

TABLE 2—Age Distribution of New York State Veterinarians, December, 1948

Age	No.	Per cent
20-24	28	2.6
25-29	135	12.6
30-34	162	15.2
35-39	144	13.5
40-44	98	9.2
45-49	60	5.6
50-54	95	8.9
55-59	122	11.4
60-64	76	7.1
65-69	60	5.6
70-74	49	4.6
75+	40	3.7
	Total 1,069	

In 1946, the New York State legislature appointed a temporary commission to study the need for a state university and additional facilities for higher education. This commission, whose chairman was Owen D. Young, reported to the governor and the legislature in 1948.[3] Among a number of recommendations to further higher education in the state, was one dealing with the establishment of another veterinary college at one of two new medical centers to be created. In explanation of this recommendation, the report states as follows:

> An unsatisfied demand exists in New York State for veterinarians, which can best be met through the establishment of a new school of veterinary medicine. Many elements in the curriculum of veterinary medicine are common to curriculums in the field of medicine, dentistry, nursing, and public health. For this reason, it would be advantageous to locate the new school of veterinary medicine at one of the medical centers.

The 1948 legislature enacted new education laws following the commission's report and the section dealing with the two medical centers reads as follows:

> One of such centers shall be located in or as close to the City of New York as may be feasible, and the other, in some other area of the state at least 100 miles distant from the City of New York. Provision for a new school of veterinary medicine shall be included in one of such centers.

Thus, it can be seen that the state is seriously considering the establishment of a new school of veterinary medicine.

WHAT IS NEEDED

It has already been pointed out that, on the basis of mortality estimates, New York will need a minimum of 25 additional veterinarians each year to maintain the number it has at the present time. Since New York is already operating one veterinary college, two questions immediately arise: (1) How many students is it graduating each year? (2) What becomes of these young veterinarians? To analyze this phase of the problem, a study was made of the 320 (approximately 35 per class) graduates of the last nine classes of the veterinary college at Cornell University. Of this total number, 234 (73%) are now residents of New York State, and the remainder are nonresidents. About 26 graduates of each of the last nine classes remained in New York. Since it has been the policy of the college to accept a number of students not residents of the state, the data were further analyzed to determine what finally becomes of these nonresident

TABLE 3—An Estimate of Veterinarians Under Sixty-Five Years of Age Needed to Maintain Total Number

Age group	Year				
	1948	1953	1958	1963	1968
20-24	28	115	144	113	86
25-29	135	28	113	142	111
30-34	162	133	28	111	140
35-39	144	158	130	27	109
40-44	98	140	153	126	26
45-49	60	94	134	147	121
50-54	95	57	89	126	139
54-59	122	87	52	82	116
60-64	76	108	77	46	72
Total	920	920	920	920	920

students. Of 51 accepted, 44 are still nonresidents of New York and 7 are engaged in some phase of veterinary medicine in the state. These figures show that, of the students who matriculated as nonresidents, 86 per cent remain in the nonresident category following graduation; and of the students who matriculated as New York State residents, 84 per cent remain in the state. A study of the schools from which the veterinarians in New York were graduated indicates that 24 different schools are represented. Eleven of these schools are still functioning and continue to turn out veterinarians, while the other 13 are out of existence. By far the majority received their training at the New York State Veterinary College, but a number of the younger men who have received their training outside of the state, take up practice in New York. While the number of graduates from colleges outside of the state is not large, it will add to the number of additional resident veterinarians that might be expected to locate in New York each year. Of 463 licensed veterinarians in the state less than 40 years of age, 97 (21%) were graduated from schools outside, and 336 (79%) received their training from the New York State Veterinary College.

In the veterinary college, at the present time, there is a total of 187 undergraduates, of whom 147 are New York residents. The average number per class is somewhat higher now than during the last few years when quotas were placed on the number of students admitted to any one college at Cornell University. If the number of students accepted remains about the same, and there is evidence that it will,[4] then the present veterinary college can supply the replacement needs for the state; but there is serious doubt as to whether this number will allow for increased veterinary service which is being demanded from many groups. As plans develop for the second school, the over-all cost of training such students must be considered. Currently, the New York State Veterinary College is operating under a total state appropriation, for the fiscal year 1948-1949, of $533,183. This includes appropriations for teaching, research, and extension. If a new school were established, it too would probably be engaged in similar work. On the basis of the present undergraduate enrollment in the college and money appropriated, the cost to the state of New York for each student each year is $2,800. If this figure is multiplied by 4, representing the number of years in the professional school to obtain a degree, then the state has a total investment of $11,200 in each student that graduates. For out-of-state students, tuition at the rate of $300 per year is charged and can be deducted from the unit cost per student, but for New York residents, tuition is free.

SUMMARY

A survey of all veterinarians in New York was made, tabulating the type of work engaged in, college granting degree, and present age group. On the basis of mortality statistics, the number needed each year to maintain the present total of 920 veterinarians under 65 years of age has been estimated. The number of students graduating each year from New York State Veterinary College is also given, with total cost per student, and reference is made to the proposed establishment of a second veterinary college in New York.

References

[3]Olson, Carl, Jr.: Veterinary Medicine in Nebraska. J.A.V.M.A., *113*, (1948):428-431.

[4]Hagan, W. A.: Annual Report of the New York State Veterinary College at Cornell University—Number 27A, (1946-1947):7.

[5]Young, Owen D.: Report of the Temporary Commission on the Need for a State University. New York State Legislative Document No. 30, 1948.

[6]Hagan, W. A.: Christmas Letter to the Alumni of the New York State Veterinary College, 1948.

Streamlining Science

The Hoover Commission, whose recommendations on the reorganization of the executive branch of the federal government have been quite generally approved, appears to trek on unfamiliar ground when it proposes to have all of the research work of the USDA placed under a single head.

Research, in the sense of critical investigation or experimentation aiming at the discovery of new facts, covers too much territory in agriculture and has too many unrelated components to be trusted to the wisdom of one set of brains. It comprises practically everything biological and physical under the sun, and is the over-all provider of human subsistence. Would any scientist feel equal to the task? Hardly, because he would know that streamlining the present and future research problems among the diversified components of agriculture would sterilize them. There can be no great generalissimo of what is too glibly spoken of as *research*. In this place, it is not necessary to say more.

The only positive proof of the diagnosis of brucellosis (human) is isolation of the causative organism.—*Am. J. Pub. Health*, 39, *July*, 1949: 866.

The Present Status of Artificial Insemination in Dairy Cattle

JOHN B. HERRICK, D.V.M.

Ames, Iowa

ARTIFICIAL insemination (AI) of dairy cattle is a rapidly developing program, despite the fact that the method has been in operation but a short time. Some states accepted the program ten years ago, but the majority are just beginning to use the plan.

A survey was conducted to ascertain the states using AI. The existing types of organizations, training offered to technicians, the need of further research, and the training of personnel necessary to handle the technical and research part of the program were the main points of interest in the survey.

Table 1 shows the states and provinces, with the number of cows bred artificially during 1948, the training of technicians, and the type of organization. Table 2 shows the problems that the various states are working on and the training and number of project workers.

SUMMARY OF TABLES 1 AND 2

The number of dairy cows of breeding age in the United States was 26,259,939, with 1,832,709 inseminated artificially during 1948. These figures were based upon the survey. Some states with large numbers of cows in AI programs were: Wisconsin, 335,000; Pennsylvania, 162,000; New York, 150,000; Minnesota, 150,000; Iowa, 120,000; Michigan, 100,000; Illinois, 100,000.

This work was done by 1,752 trained technicians and 159 veterinarians. Most technicians were offered only one week of formal training but had field supervision for one or two months. Twenty-one colleges offered AI courses to senior college and graduate students.

COMMON TYPES OF AI ORGANIZATIONS

Organization is one of the prime essentials in a successful AI program. The following brief descriptions cover the main types of AI organizations.

Federated Type.—The federated type is made up of a number of local coöperative units which provide capital for the establishment of a bull stud. A member for each unit acts as a board member for the federation.

Central Type.—The central type is frequently used by privately owned bull studs. The independent local unit has its own board of directors, is usually a coöperative, and contracts with a stud for semen and services. The services may include auditing, record keeping, training of technicians, and publicity. Contracts are usually for one year only.

Direct Membership Type.—There are several variations of this type. In one, the area covered includes several counties and the dairymen become members of the central unit rather than of local units. The size of the area serviced depends on the ease of service and the readiness with which boundaries can be changed. Representation is by areas and is determined by number of cows bred. There is no board of directors in the local units. Another type, used by privately owned bull studs, has no local organization or representation. The farmer merely signs as a member and the stud hires the technician.

Several other variations are used, but the above three types are most common.

Table 2 lists the research programs and project workers in this field in the various states.

PROBLEMS IN THE FIELD

As with any new program, there are some immediate problems. Below is the summary of replies to a question in the survey on immediate problems:

	States
1) Infertility, sterility, or repeater cow	33
2) Locating and training capable technicians	4
3) Simple method of semen evaluation	3
4) Herd management as it affects reproduction	1

From the Department of Dairy Husbandry, Iowa State College, Ames.

TABLE 1—Status of Artificial Insemination Program in 1948

State	Dairy cows of breeding age (No.)	Cows bred artificially (No.)	Inseminators: Trained technicians	Inseminators: Veterinarians	College course in AI	Time recommended for technician training	Type of organization
Alabama	485,000	6,200	14	5	No	10 days	Central—counties as local
Arizona	48,000	5,000	4	....	No	3 weeks	Local & private.
Arkansas	460,000	7,500	23	....	No	1 week	Central—district local association.
California	1,110,000	13,000	8	11	No	1 month	Local—federated.
Colorado	224,000	6,000	11	26	For veterinary students only	10 days	College-owned bull and stud.
Connecticut	130,000	15,500	13	....	No	1-2 weeks	Central.
Delaware	45,000	4,000	3	....	No	6 mo. exper.	Central—local units.
Florida	170,000	Started Nov. 1948	3	....	No	10 days	Independent locals.
Georgia	260,000	1,000	7	....	No	10 days	Local buy semen from outside state.
Hawaii	9,500	500	....	1	No	....	Private.
Idaho	234,000	7,000	10	....	Yes	2 weeks	Private.
Illinois	1,086,000	100,000	90	....	No	1 month	Central farmer cooperative.
Indiana	757,000	50,000	81	4	No	10 days	Central & private.
Iowa	1,150,000	120,000	115	20	Yes	1 week	Independent Local Coöperative.
Kansas	655,000	2,700	4	4	No	10 days	Buy semen from outside state.
Kentucky	717,000	23,230	26	....	No	1 week	Central.
Louisiana	290,000	13,000	36	....	Yes	10 days	Central county—local units.
Maine	126,000	28,268	21	....	No	2 weeks	Central.
Maryland	232,000	15,364	16	1	Yes	6 days	Central.
Massachusetts	130,000	19,994	18	....	Yes	1 week	Central and local.
Michigan	1,000,000	100,000	130	....	Yes	10 days	Federated type of state organization 134 locals.
Minnesota	1,600,000	150,000	150	....	Yes	2-4 weeks	Local—federated.
Mississippi	600,000	14,000	....	14	Yes	6-10 days	Central—Independent.
Missouri	1,115,000	68,000	87	....	Yes	1 week	Central—2 cooperative associations.
Montana	1,135,000	4,960	7	1	No	1 week	Central.
Nebraska	514,000	41,310	35	....	No	2-6 weeks	Local—nonstock coöperative.
Nevada	19,000	480	2	....	No	6 weeks	County organization.
New Hampshire	78,000	16,092	13	13	No	2 weeks	Central.
New Jersey	169,000	33,800	15	12	Yes	10 days	Independent cooperative breeding association.
New Mexico	No organized artificial insemination association in New Mexico						
New York	1,600,000	150,000	118	2	No	2 weeks	Central—local.
N. Carolina	420,000	17,000	70	4	Yes	1 week	Incorporated cooperative local—buy private semen.
North Dakota	398,000	2,500	5	....	No	2-4 weeks	Central—local cooperatives.
Ohio	1,589,000	116,500	130	1	Yes	2 weeks	Central—local cooperatives.
Oklahoma	765,000	20,000	30	1	No	2 weeks	District breed association and affiliates.
Oregon	310,000	12,000	5	1	Yes	10 days	Central—local cooperative.
Pennsylvania	1,160,000	162,000	129	3	Yes	1-2 weeks	Local coöperative with central cooperative.
Rhode Island	20,000	1,000	2	....	No	2 weeks	Local.
S. Carolina	179,000	6,356	16	....	No	1 week	Local coöperative, buy semen from college stud.
South Dakota	.....	5,000	11	....	Yes	2 weeks	Central.
Tennessee	700,000	20,000	....	....	Yes	5 days	Two centrals with independent locals.

TABLE 1 (continued)—Status of Artificial Insemination Program in 1948

State	Dairy cows of breeding age (No.)	Cows bred artificially (No.)	Inseminators: Trained technicians	Inseminators: Veterinarians	College course in AI	Time recommended for training technician	Type of organization
Texas	30,000	15,000	30	3	Yes	5 days	Locals buy semen from private stud.
Utah	115,000	1,500	4	....	Yes	2 weeks	Central coöperative.
Vermont	300,000	14,000	19	....	No	2 weeks	County coöperative, buy semen from private stud.
Virginia	469,000	13,455	2	15	No	2 weeks	2 breeding centers with farmer local coöperatives.
Washington	350,000	27,500	26	....	Yes	1 week	Central.
West Virginia	240,000	12,000	13	....	No	2-3 weeks	Central and county local.
Wisconsin	2,750,000	335,000	200	11	Yes	2 weeks	4 direct membership locals not affiliated but buy semen.
Wyoming	60,000	Started Dec. 1948	....	....	No	....	Part Utah assoc. As a service of extension service.
Puerto Rico	No data available		....	....	....	....	....
Ontario	1,256,439	35,000	....	6	Yes	....	6 licenced centers.

• • •

TABLE 2—Research Program on Artificial Insemination

State	Problem	Number and training of project workers
Alabama	Methods of inseminating; use of penicillin in semen.	1 Dairy husbandry.
Arkansas	Transportation of semen; dilutions; breeding troubles.	1 Dairy husbandry. 1 Veterinary medicine.
California	Processing semen; difficult breedings.	1 Dairy husbandry.
Florida	Study of longevity of bulls in natural and artificial breedings.	1 Dairy husbandry.
Illinois	Chemical physiology of bull semen.	1 Dairy husbandry. 1 Chemistry
Indiana	Causes of lowered fertility.	1 Dairy husbandry. 1 Animal husbandry.
Iowa	Bacteriologic study of semen and male and female genital tract.	1 Veterinary medicine.
Kentucky	Diluters; semen evaluation; herd management as it affects conception.	1 Dairy husbandry. 1 Veterinary medicine.
Louisiana	Dilution; frequency of collection; sperm count.	3 Dairy husbandry.
Maine	Inheritance in dairy cattle.	2 Dairy husbandry.
Michigan	Fertility and sterility problems.	
Missouri	Factors affecting conception rate; relationship between quality of semen and conception rate; proper time to inseminate; improved technique for dilution of semen.	3 Dairy husbandry. 1 Physiology.
Nebraska	Controlling bacterial growth in semen.	1 Dairy husbandry.
North Carolina	Factors affecting reproductive processes; evaluation of bull semen.	3 Dairy husbandry. 1 Veterinary medicine. 1 Physiology.
New Jersey	Semen preservation; bull management; semen shipment.	5 Dairy husbandry. 1 Veterinary medicine. 2 Physiology. 1 Chemistry.
New York	Semen metabolism; antibiotics in semen; dilution; bull nutrition in relation to fertility.	1 Dairy husbandry. 1 Physiology.
Ohio	Diluters.	1 Dairy husbandry. 1 Physiology. 1 Veterinary medicine.
Pennsylvania	Control of bacteria with penicillin and streptomycin; new test for semen quality; relation of nutrition to fertility; treatment of problem bulls.	2 Dairy husbandry. 1 Physiology. 1 Veterinary medicine. 1 Bacteriology.
Puerto Rico	Effect of climate on semen.	1 Veterinary medicine.
South Carolina	Effect of decreased metabolism on fertility bulls; effect of various diluters.	1 Dairy husbandry. 1 Physiology.
South Dakota	Bull selection.	1 Physiology. 1 Dairy husbandry.
Tennessee	Effect of agitation on semen.	
Vermont	Effect of feed on fertility of semen.	1 Dairy husbandry.
Washington	Breeding problems.	1 Dairy husbandry.
Wisconsin	Early estimate of fertility in bulls; age of ovum in relation to fertility; new type diluters; antibiotics added to semen; problem cows.	3 Dairy husbandry. 1 Physiology. 2 Chemistry.

5) Improved diluters 2
6) Prolonging longevity of semen 1
7) Finances — reaching areas of low cattle population 1
8) Obtaining proved and prepotent bulls ... 2
9) Identification and listing of off-spring .. 2

TRAINING FOR RESEARCH IN AI

One question in the survey as to educational background necessary for research in problems relating to AI revealed a variety of opinions with special emphasis on advanced college training in physiology, bacteriology, chemistry, and nutrition. Ten replies stated that training in animal husbandry and dairy husbandry was sufficient. The specific fields and the frequency mentioned are listed.

Physiology	11
Chemistry	10
Veterinary medicine	9
Nutrition	8
Dairy husbandry	5
Animal husbandry	5
Bacteriology	5
Genetics	4
Endocrinology	3

It is interesting to note that 33 states are concerned with the reproductive disorders in the female, yet only 9 veterinarians are doing any type of research.

SUMMARY

The recent progress of artificial insemination of dairy cattle is largely due to research carried on by capable men. This rapidly developing program is expected to contribute much toward the improvement of dairy herds. The continued progress is dependent on the education and research now being conducted.

Caudal anesthesia is a "must" in most obstetrical work.—*F. B. Young, D.V.M., Waukee, Iowa.*

A minimum of air space should be left above diluted semen that is stored and shipped for routine artificial breeding. Semen samples should be subjected to a minimum of mixing.—*J. Dai. Sci., April,* 1949: 359.

About 5 per cent of 2,188 reproductive tracts from sows selected at random at slaughter houses showed anatomic changes which would interfere with reproduction. About 300 uteri were pregnant, eight in the presence of cystic ovaries.—*A. V. Nalbandov, Ph. D., Illinois.*

The Reliability of Sutures and of Suturing

Granting that a long, illustrated article on "Stress, Strain, and Sutures" (*Ann. Surg.*, Sept., 1948) is a criterion, there must be a whale of a difference between the problems involved in the suturing of wounds in man and in domestic animals. Quoting:

> No reputable engineer attempts to construct a bridge without knowing first the stresses and strains to which the structure will probably be subjected, the tensile strengths of the materials, the calculated total strength of his design, and the margins of safety to be allowed.

To say the least, comparing the strain of a surgeon's suture with that of a bridge's cable is quite foreign to the veterinary surgeon's notion of the engineering involved in the closure of wounds with sutures. The whole thesis is an ado over the "strain on the strand and the knot" of the material used. In other words, the author contends that the tensile strength of the silk, the cotton, the linen, the silkworm gut, and the catgut selected for the given operation must be just right because "life literally hangs by a thread," in many instances.

Human surgery is "none of our business" but, speaking for our own field, that much bustle about the strength of the sutures to the exclusion of more important factors is assuredly not justified. There are several reasons why sutures "let go," but all will agree that the breaking of the thread is not one of them. Sutures shear their way out gradually under the pressure of the thread or tear out from the powerful movements of our noncoöperative patients but never is the suture material torn. So, why the fuss over tensile strength?

The long and complex wound of cesarean section in cows or of the gravid uterus and the tremendous accidental wounds in the breast, shoulder, and buttocks of horses are suture problems of the first magnitude, but in none of these has the strand of a suture or its knot been found torn because of its tensile weakness. By dissolving too soon in animals carrying a high temperature, catgut may sometimes be an exception. As a matter of fact, the tensile strength of the material is of minor importance compared with the traction that makes sutures shear their way out.

What we are trying to say is that the engineering required to prevent premature discontinuity of a sutured wound lies not in the strength of the thread but in the ingenious control of traction and stitch pressure.

Surgical Correction of Hematoma of the Ear Flap

Prepare the surgical field, which should include both medial and lateral surfaces of the ear flap, to obtain nearly aseptic conditions. Using sterile technique, puncture the dorsal end (extended ear) of the hematoma and drain the serum, then with blunt scissors incise the skin. Starting at the puncture wound make a complete S-shaped incision the full length of the hematoma area.

Remove all fibrinated blood from the hematoma, being careful not to irritate the cartilage or medial surface of the skin. To aid in hemostasis and prevent infection, sprinkle sulfanilamide granules into the surgical wound.

Firmly fix the skin to the cartilage in its normal position. The plastic fixation is accomplished by closing the surgical S-shaped incision with stainless steel No. 32, interrupted sutures, through-and-through the ear flap. These sutures are placed about ¼ in. from the line of incision. Firmly fix the skin of the hematoma area not included by the incision sutures, by placing interrupted (through-and-through the ear flap), stainless steel sutures as may be required to hold the skin to the cartilage. Tie the sutures loosely to prevent distortion.

After the stainless steel sutures are placed, apply firm manual pressure over the hematoma area to fix the sutures and to bring the skin and cartilage into close apposition. The fixed position of the stainless steel sutures will hold the skin and cartilage in apposition, as is necessary for first intention healing. The fixed stainless steel sutures will also prevent re-collection of serum between the skin and cartilage, which would prevent healing.

To protect the surgical field from infection and to maintain the ear flap in extended position, fix the ear flap, using adhesive tape over the head, and cover the surgical wound with a sterile dressing.

Give the dog barbiturates for a few days following the operation to keep it comfortable and to prevent excessive shaking of the head which would irritate the ear. Remove the stainless steel sutures in about two weeks.

The distortion following surgical correction of ear hematomas is due to the contraction of cicatridal tissue in the later stages of healing. The object of the surgical technique described is to minimize the production of scar tissue, thus preventing distortion. The two major causes of excessive granulation tissue are infection in the hematoma cavity and the collection of serum in the healing wound. Sterile technique eliminates infection, and the use of properly placed stainless steel sutures prevent the collection of serum in the wound. The linear healing contraction is minimized by the S-shaped incision which distributes the contraction in all directions over the hematoma area.—*C. P. Zepp, Sr., D.V.M., New York, N.Y.*

Humane Dehorning

Humane dehorning is a professional service which helps to round out a complete veterinary service. When carefully performed, it is a good practice builder and it discourages "handy man" dehorning.

Adequate restraint is essential for the accurate injection of the nerve-blocking anesthetic and for proper placement of the saw for dehorning. Without adequate restraint, most animals will fight a little, even if the nerve block is fully effective. Animals resent the vibration of the saw, the approach of a stranger, and movement directly before the eyes. I use three methods of restraint.

1) When the animal is in a stanchion, I use a nose lead and pull the head around to the side as when drawing a blood sample; pull the head to left for right horn and vice versa.

2) When the animal is tied by rope or chain around the neck, the head is pulled to one side; or a nose lead may be used to hold the head in position by running the nose lead rope under the tail and back to the link on the lead.

3) Loose cattle are not dehorned if they are too big to catch by hand. Animals up to 600 lb. or 700 lb. are caught and restrained as described above, with the lead rope under the tail.

To block the nerve, restrain the animal in dehorning position. With the finger, locate the facial crest halfway between the center of the eye and the base of the horn. Insert a 19-gauge, 3/4-in. needle straight through the skin, touch the edge of the crest, drop ¼ in. below and inject 7 cc. or 8 cc. of (2%) novocain; large bulls require up to 20 cc. Do not inject too close to the horn. The cornual nerve is divided into dorsal and ventral branches. The injection must be made anterior to this division for a complete block. All of the cattle should receive the injections before starting to dehorn. We have often injected the anesthetic into bulls before dinner and dehorned them afterward. (Dissect this nerve, and the picture becomes very clear.)

After allowing sufficient time (15 minutes or more), again restrain the animal and saw off the horn. I begin to saw from the bottom

of the horn because then the arteries are easily found. The groove in which the ventral branch of the cornual artery lies can be felt at the base of the horn. Start the saw here and work up and medially, taking a good ring of hair with the horn.

After removing the horn, if the sawing has been done properly, there will be a main ventral artery. Grasp it with a strong-nosed artery forceps and pull and twist to break it off as far back as possible. There is also a small anterior branch of this artery which I look for and pull. If, after the horn is removed, the arteries are not as described, the sawing was not deep enough. Rather than waste time, saw off another ¼ in., and then the arteries will be easily located. Dust an astringent healing powder on the wound. Do not put cotton or bandages over this area. If an infection develops under a bandage, it is not noticed until the animal becomes visibly sick. Pine tar may be used on the area during fly season. Do not turn cattle out in rain or weather colder than 20 F.

The procedure becomes simple following practice on 25 or 30 head. A neighboring veterinarian and I worked together to develop this technique. Now, we each dehorn more than 2,000 head a year.—*G. W. Jeffery, D.V.M., Bronson, Mich.*

Blood Transfusion in Large Animals

The transfusion of whole blood in large animal practice has proved of great value as a treatment, and has added prestige to the veterinary profession. Whole blood is used in shock, severe hemorrhage, purpura hemorrhagica, sweet clover poisoning, parasitism, icteric foals, and various types of anemia.

It is not necessary to type blood in the ordinary farm horse or cow, even though a number of types have been identified. In the purebred animal, over 50 different types have been demonstrated. Therefore, in the valuable animal it may be advisable to crossmatch before making a large transfusion. In the icteric foal, the blood should always be typed, because the condition is due to an abnormal destruction of the red blood cells by a factor similar to the Rh factor of man. The serum of the dam agglutinates the red blood cells of the foal, but the serum of the foal does not agglutinate the red cells of the dam. (This happens only when the mare has become sensitized to the erythrocytes of the sire, and when the erythrocytes of the foal are the same as those of the sire.) The icteric foal develops when the colostrum of the mare contains sufficient antibodies to cause agglutination and destruction of the red blood cells of the foal. Therefore, the dam of an icteric foal is never a suitable donor for her own foal, and it is advisable to check any mare so used.

The technique of transfusing blood in horses or cows, either in barnyards or hospitals, is as follows: Place a piece of glass-surfaced rubber tubing 3½ ft. long on each outlet of a Shikles syringe. Fill the intake tube by aspirating from a bottle of 10 per cent sodium citrate solution. This excludes air and forms a citrate coating in the tube to prevent coagulation of blood as it is pumped through.*

Stand the 2 animals (donor and recipient) side by side and work between them. Insert a 12-gauge, 2 1/2-in. needle in the jugular vein of each animal, with the needle pointing up the neck in the donor and down the neck in the patient. Have an assistant hold the needle and tubing in line with the jugular vein of each animal, and apply pressure below the needle on the vein being used—while aspirating from the donor and while injecting into the patient. The operator can determine the amount of blood transfused by adding 40 cc. each time the syringe is emptied.

Wash the tubing and syringe *immediately* following disconnection from the vein, using a cold solution of sodium hypochlorite in a bucket conveniently placed before beginning the transfusion. The secret in the successful use of this method is to fill the tubing with citrate solution to exclude air as well as to coat the tubing, and then to rinse immediately upon completion of the transfusion. Unless these steps are carefully taken, there is danger of coagulation in the tubing or the syringe.

In the event the donor and the patient cannot be placed side by side, the blood may be collected, citrated, and transfused by gravity. An icteric foal, which requires large quantities of blood, may be bled through a needle in the opposite jugular vein while receiving the blood.—*W. M. Coffee, D.V.M., La Center, Ky.*

*This citrate solution is pumped into the syringe and out through the transfusion tube before this is connected to the needle in the jugular vein of the patient.

The diagnosis of virus abortion in the mare is made by gross and microscopic examination of the liver of the fetus. Minute focal necrosis appears on the liver surface. —*H. S. Cameron, D.V.M., Calif.*

Never attempt to castrate a cat at the same time dental work or other surgery is done, especially if there is infection in any part of the body.—*W. A. Young, D.V.M., Chicago.*

CLINICAL DATA

Clinical Notes

Enterotoxemia offers a serious threat to sheep production because lambs are already at the lowest number since the Civil War.

Canine patients "get along very well" following heartworm surgery, says Dr. Carl F. Schlotthauer of the Mayo Foundation.

Doubling normal dosages of most estrogens used in tenderizing poultry may cause death due to excessive blood fats.

Mastitis-producing organisms are present in approximately 33 per cent of the udders of cows in New York State.—*F. H. Fox, D.V.M., New York.*

The shell quality, percentage of thick white, keeping quality of thick white, percentage of blood spots, and egg weight are all inherited characteristics.

Human brucellosis is a more important problem in many states than typhoid fever. It is spread to man from animals by contact with infected animals, by ingestion of contaminated foods from infected animals, or by inhalation of contaminated dust.

The physiologic mechanism by which fowl maintain their hydration is not known. The moisture in the feces (*Poult. Sci.*, March, 1949) accounts for only 10 per cent of the H_2O intake.

Practicing veterinarians should be familiar with the technique of bleeding swine so that the service can be performed with dispatch when requested by the swine raiser. The preferred method is through the anterior vena cava.—*H. S. Cameron, D.V.M., Calif.*

Cornell University tests with timothy, Ladino clover, alfalfa, and birdsfoot trefoil pastures showed that milk from cows on Ladino clover developed off-flavors most quickly; cows on birdsfoot trefoil produced milk with the best storage quality. The difference is attributed, at least in part, to the higher vitamin E content of birdsfoot trefoil, the vitamin E being credited with slowing up spoilage and off-flavor development.

Records show that 16 to 33 per cent of persons bitten by rabid animals die.—*I. H. Borts, M.D.*

The rumen is a vitamin laboratory. It stops producing vitamins on dry range or dry roughage.

Sheep are not subject to epizoötics like brucellosis and tuberculosis, although anthrax may take a heavy toll.—*H. S. Cameron, D.V.M., Calif.*

Feeding unwashed tripe in furbearing animals is, in many cases, comparable to feeding strychnine.—*T. T. Chaddock, D.V.M., Wisconsin.*

Michigan State College studies show that about 80 per cent of runty pigs with scours recover rapidly when placed on rations containing adequate protein and B vitamins.

The role of a virus as a cause of bovine abortions has not been thoroughly explored. It would appear at times that a virus might be involved but limited animal inoculations have not verified it.—*H. S. Cameron, D.V.M., Calif.*

Thyroprotein may exert a harmful effect on dairy cows because it increases thyroid activity and speeds up the metabolic processes. Thiouracil has the opposite effect. It slows down metabolic processes.—*L. E. St. Clair, D.V.M., Illinois.*

Administration of alum-precipitated tetanus toxoid to individuals four, five, and perhaps even six years after basic tetanus immunization, or after the last booster, seemed to give adequate protection within five days, in studies at the Yale University medical school.—*Yale J. Biol. and Med., May,* 1949.

Contaminated feed and water are important avenues of fowl typhoid transmission (*Poult. Sci.*, May, 1949). The fowl typhoid organism apparently loses its virulence quickly in litter and in feeding and watering utensils (*ibid.*). All of which means: Clean fountains and hoppers frequently.

Japanese Equine Encephalomyelitis 1947 Epizootic
1. Epizootiology

MAJOR K. F. BURNS, V.C., U.S. Army, and M. MATUMOTO, M.D.

DURING recent years, considerable data have been accumulated on the dissemination of the virus of Japanese B encephalitis among animals and human beings in Japan[1,2], the inference being that by identifying the etiologic agent of the animal disease, the reservoir of the human disease might be determined.

This paper records studies on an outbreak of encephalomyelitis among horses in epizoötic proportions during the summer and early fall of 1947 in Japan. In another paper,[3] the serologic and etiologic aspects of this malady will be discussed.

GENERAL ASPECTS OF THE DISEASE IN 1947

The first case of an encephalitis-type of infection in Equidae was reported on May

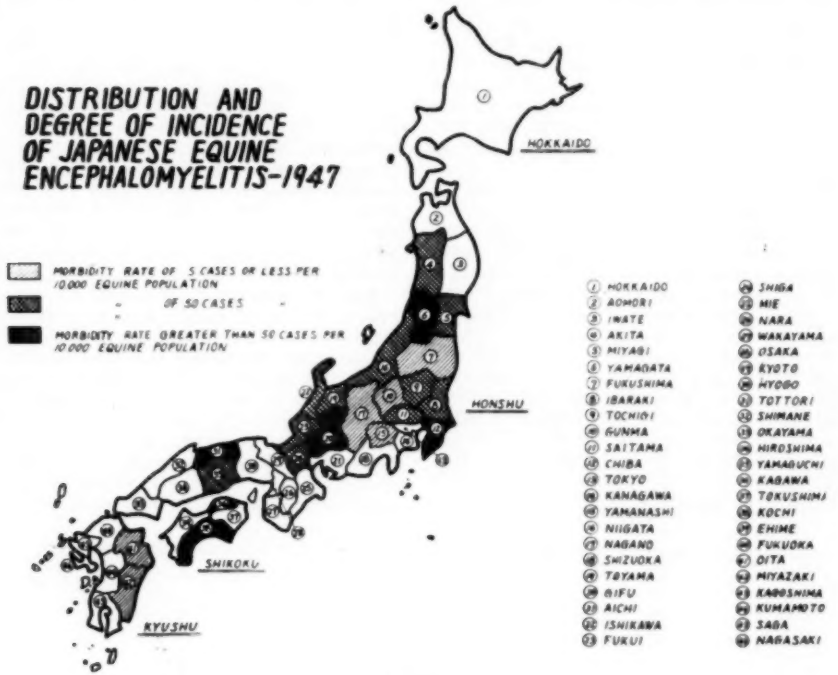


Figure 1

10, 1947, from Kochi Prefecture on Shikoku, one of the southern islands. Subsequent to this date, a total of 1,209 cases were reported, with a fatality rate of 50.5 per cent. This is the largest epizoötic since 1935 and 1936.

Concomitantly with the appearance of the disease in animals, scattered encephalitis cases were observed among human beings in identical geographic areas. In figure 1, the geographic distribution and

From The Virus and Rickettsial Section, 406th Medical General Laboratory, APO 500 c/o Postmaster, San Francisco, Calif.

We express our indebtedness to Major W. W. Scothorn, V.C., U.S.A., Veterinary Affairs Division, Public Health and Welfare Section of the Supreme Command for the Allied Powers; and to Dr. Hiroshi Saito, Department of Animal Hygiene, Ministry of Agriculture and Forestry, Japan.

Dr. Matumoto is on leave of absence from the Institute of Infectious Diseases, Tokyo University, Japan.

case incidence of the disease in horses are based on data in table 1.

Morbidity.—Portrayed in table 1 are morbidity rates in each prefecture calculated on the basis of prefectural equine population figures. A wide range was observed (0.06 to 1.52%) even if the prefectures which had less than 20 cases are omitted. The over-all morbidity was 0.25 per cent.

Because of the irregular distribution of reported cases, it was considered that more accurate epizoötiologic data, particularly regarding morbidity and mortality, could be obtained. For administrative purposes, Japan is divided into small areas with a veterinarian assigned to each area. When a case of encephalomyelitis was reported, an actual head count of the animals in that administrative district was made. For purposes of presentation, these areas have been grouped by prefecture, and from these head counts, the equine population figures given in table 2 were derived. On this basis, the total morbidity was 1.84 per cent.

Mortality and Fatality.—The mortality was exceptionally high and extremely variable ranging from 0.025 to 0.72 per cent, with an average rate of 0.12 per cent. These figures are based upon the entire prefectural population. Mortality figures shown in table 2 are calculated on the basis of actual counts of horses in areas where cases occurred (*see* above). If the prefectures which had less than 20 cases are omitted, the range of figures lies between 0.51 and 2.66 per cent. In total, the figure is 0.96 per cent, indicating that 1 in 100 horses succumbed to an encephalitis type of infection.

Fatalities were extremely high and ranged from 35.0 to 73.0 per cent. For the entire area of Japan, 50.5 per cent, or approximately one half of the reported encephalomyelitic cases, expired as a result of this disease. It is noteworthy that the actual mortality was unquestionably lower than these figures indicate, due to the fact that we could not take into consideration mild or abortive cases which have undoubtedly escaped from these statistics.

Case Distribution by Sex.—As shown in table 3, there was an approximately equal case distribution with 314 (28.0%), 443 (36.6%), and 452 (37.4%) cases in males, females, and geldings, respectively. Figures on the distribution of the equine population by age and sex were not available.

Case Distribution by Age.—In Japan, most of the foals are born during the spring, and the age is calculated in the manner practiced in America by the Thoroughbred Racing Association. As a prototype, an animal foaled during July, 1947, is 1 year of age on Jan. 1, 1948.

Figures of case distribution by age (Japanese age) indicates more cases occurred among younger animals than in the older age groups. The peak of distribution lies at 3 years of age, with approximately 80 per cent of cases being found in the age groups of 2, 3, and 4 years.

Horses prior to weaning (1-year-age group) comprised only 1.9 per cent of the total cases. This probably can be explained by passive immunity acquired from the dam. Statistics of distribution of equine population by area are not available.

Relationship to Climatic Conditions.—The seasonal pattern of this disease is striking, with the outbreak occurring from June through October, although a few cases were reported in May and November.

TABLE I—Morbidity and Mortality for Japanese Equine Encephalomyelitis During 1947

Prefecture	Equine population	Cases (No.)	Deaths (No.)	Morbidity (%)	Mortality (%)	Fatality* (%)
Miyagi	38,434	134	98	0.35	0.25	75.0
Akita	51,913	210	88	0.40	0.17	41.9
Yamagata	22,717	146	88	0.64	0.39	60.0
Fukushima	57,818	11	2	0.02	0.003	14.4
Ibaraki	31,632	22	8	0.07	0.025	36.3
Tochigi	47,199	26	14	0.06	0.030	53.8
Gunma	25,294	11	7	0.04	0.028	63.0
Saitama	17,075	13	9	0.08	0.053	67.5
Chiba	14,454	126	64	0.87	0.44	50.7
Niigata	17,113	75	36	0.44	0.21	48.0
Toyama	14,269	50	32	0.35	0.22	63.0
Ishikawa	5,309	26	11	0.49	0.21	42.3
Fukui	5,115	10	6	0.20	0.12	60.0
Yamanashi	14,000	7	5	0.05	0.036	71.4
Nagano	32,183	1	0	0.003	0	0
Gifu	18,253	197	69	1.08	0.38	35.0
Shiga	895	2	1	0.22	0.11	50.0
Tottori	2,930	44	18	1.50	0.61	40.8
Okayama	5,693	6	5	0.11	0.088	83.3
Kagawa	2,365	36	17	1.52	0.72	47.3
Kochi	8,838	52	30	0.59	0.34	57.7
Oita	19,423	2	1	0.01	0.005	50.0
Miyazaki	38,382	2	2	0.005	0.005	100.0
Total	491,334	1,209	611	0.25	0.12	50.5

*Percentage based on deaths per number of cases.

During 1947, cases were reported earlier in the southern prefectures. In the northern prefectures of Miyagi, Yamagata, Ibaraki, Tochigi, Chiba, and Niigata, most of the cases were reported during September and October; while the outbreak in Gifu Prefecture, which is near the central portion of Honshu, occurred during August and September; and in Kochi and Kagawa prefectures on Shikoku and in Tottori Prefecture most of the cases were observed in July and August.

Mitamura *et al.*[4,5] suggested that the high attack rate during the summer months was due to climatic conditions of Japan in which the temperature peaks and insect concentrations are reached earlier in southern areas and move northward, thus favoring the insect-transmission theory of the disease.

Based upon weather information from stations throughout Japan during 1947, the average daily high temperatures during the summer months, especially July, August, and September, were considerably in excess of the norm. This would suggest that the epizoötic of this year followed the general belief that the higher the temperature during the summer season, the more likelihood there is of the development of this malady.

There is no significant difference in relative humidity between the year 1947 and previous nonepizoötic years.

Average daily rainfall during this period was generally less than that reported during normal years. There seems to be no direct relationship between the epizoötic of 1947 and climatologic conditions recorded herein, as compared with the average, other than high recorded temperatures.

TABLE 2—Morbidity and Mortality for Japanese Equine Encephalomyelitis Based upon the Equine Population of Cities, Towns, and Villages

Prefecture	Equine population	Cases (No.)	Deaths (No.)	Morbidity (%)	Mortality (%)	Fatality* (%)
Miyagi	11,212	134	98	1.20	0.87	73.0
Yamagata	10,088	146	88	1.45	0.87	60.0
Tochigi	2,761	26	14	0.94	0.51	53.8
Gunma	1,606	11	7	0.68	0.44	63.0
Chiba	5,967	126	64	2.11	1.07	50.7
Niigata	2,748	75	36	2.73	1.31	48.0
Ishikawa	414	26	11	6.28	2.66	42.3
Yamanashi	635	7	5	1.10	0.79	71.4
Gifu	6,264	197	69	3.14	1.10	35.0
Tottori	957	44	18	4.60	1.87	40.8
Okayama	32	6	5	18.75	15.63	83.3
Miyazaki	695	2	2	0.29	0.29	100.0
Total	43,379	800	417	1.84	0.95	52.1

*Percentage based on deaths per number of cases.

TABLE 3—Case Distribution by Sex among Japanese Equine Encephalomyelitis Patients During 1947

Prefecture	Male	Female	Gelding	Total
Miyagi	47	59	28	134
Akita	66	81	63	210
Yamagata	38	45	63	146
Fukushima	3	6	2	11
Ibaraki	10	7	5	22
Tochigi	16	0	10	26
Gunma	7	4	0	11
Saitama	6	3	4	13
Chiba	46	40	40	126
Niigata	4	43	28	75
Toyama	0	29	21	50
Ishikawa	2	8	16	26
Fukui	0	3	7	10
Yamanashi	2	5	0	7
Nagano	0	0	1	1
Gifu	22	38	137	197
Shiga	0	0	2	2
Tottori	6	35	3	44
Okayama	4	0	2	6
Kagawa	12	6	18	36
Kochi	23	29	0	52
Oita	0	0	2	2
Miyazaki	0	2	0	2
Total	314 (26.0%)	443 (36.6%)	452 (37.4%)	1,209

SUMMARY

Epizoötiology of Japanese equine encephalomyelitis occurring during the year 1947 has been discussed.

1) Following the first reported encephalitis type of infection among horses on May 10, 1947, from Kochi Prefecture, case reports were submitted from every island of the Japanese archipelago, with the exception of Hokkaido. Cases were reported during July, August, September, and October.

2) The reported cases totaled 1,209, with a morbidity of 1.84 per cent if the actual number of solipeds in areas where cases occurred is used as a base.

3) For the entire area of Japan, 611 equine deaths were reported. Approximately 1 animal per 100 in areas where cases occurred succumbed to an encephalitis type of infection. The case fatality was 50.5 per cent.

4) Males, females, and geldings appeared to be involved equally.

5) A larger number of cases occurred among younger animals. The peak of distribution lies at 3 years of age, with approximately 80 per cent of all cases being found in the 2- to 4-year age group.

6) The relationship of the epizoötic to seasonal changes was striking, with a majority of the cases being reported during June through October. The 1947 cases occurred first in the southern prefectures and later in the north.

References

[1]Sabin, A. B., Ginder, D. R., and Matumoto, M.: Difference in Dissemination of Japanese B Encephalitis Among Domestic Animals and Human Beings in Japan. Am. J. Hyg., *46*, (1947):341-355.

[2]Burns, K. F., and Matumoto, M.: Animal Survey for Inapparent Infection to the Virus of Japanese B Encephalitis. Am. J. Vet. Res., *10*, (1949):146-149.

[3]Burns, K. F., Tigertt, W. D., and Matumoto, M.: Japanese Equine Encephalomyelitis in 1947. II Serological and Etiological Studies. Unpublished data.

[4]Mitamura, T., Kitaoka, M., and Watanabe, S.: Epidemiological Considerations on Factors Determining Occurrence of Japanese Epidemic Encephalitis. On the Relationships of Occurrence of Epidemics to Temperature and Preceding Epidemics. Nihon Igaku, *3208*. (1940):752 (in Japanese).

[5]Mitamura, T., Kitaoka, M., and Watanabe, S.: Epidemiological Considerations on the Relationships Between Temperature and Epidemics. Nihon Igaku, *3270*. (1942):357-361 (in Japanese).

Attempted Mastitis Eradication

An attempt to eradicate *Streptococcus agalactiae* infection from ten herds, by injecting all quarters of all cows with 100,000 units of penicillin daily for five days (or any cows subsequently infected or added to the herd), by disinfecting cows and premises, and by using a penicillin cream on the udder and hands of the milker for fourteen days beginning at the time of treatment, resulted in immediate eradication from five herds. Three more herds were freed of the infection by retreatment over varied lengths of time. Seven herds remained free and one was dropped because of lack of farm coöperation.

Of the 424 cows in the herds, 35 per cent were infected with *Str. agalactiae*, 8 per cent with either *Streptococcus dysgalactiae* or *uberis*, and 11 per cent with hemolytic staphylococci.

Examinations made on selective mediums before treatment revealed that *Str. agalactiae* was present on the outside of the teats of 43 per cent of the cows and on 39 per cent of the milkers' hands after an ordinary washing.

Clinical mastitis has ceased to be a problem in all nine herds continued under observation. Milk yields have increased considerably and will be analyzed and reported later.

In the first herds treated, the penicillin was administered in 10 cc. of distilled water. Later, in three herds it was injected from single-use containers of 100,000 units of penicillin in 6 cc. of 4.5 per cent beeswax in arachis oil.—*Vet. Rec.*, (*June* 25, 1949): 357-362.

Avian Pneumoencephalitis—A New Occupational Disease?

Veterinarians may have a new transmissible disease to cope with in their expanding public health activities, in the light of mounting evidence that the virus of avian pneumoencephalitis (Newcastle disease) is a menace to human health. And, moreover, they may have to take special steps to protect themselves against this infection when caring for diseased flocks.

The newest alert to this problem comes from the College of Veterinary Medicine, The Ohio State University, where Dr. W. L. Ingalls and Miss Ann Mahoney observed "two naturally occurring cases of conjunctivitis thought to be due to the virus of Newcastle disease" (*Am. J. Pub. Health*, 39, June, 1949: 737-740). One of the cases, diagnosed by means of all available tests, occurred in a junior veterinary student who is believed to have contracted the infection while conducting autopsies on three acutely infected chickens. The other was a broiler plant operator whose flocks were actively infected.

The authors believe that the student case is the first reported instance of isolation of this virus from man in the United States.

The student's symptoms were edema of the lids and hyperemia of the scleral and conjunctival blood vessels of the right eye, developing about five days after exposure. Comparable symptoms were seen in the poultryman three days after the disease was first noticed in his flock.

Foreign nations previously have reported that the virus of this disease has an affinity for the eye of man, and experiences in this country (*see* JOURNAL, Jan., 1949: 3) have raised a suspicion that the virus may be responsible for certain respiratory and nervous disorders in man.

Man's Greatest Achievement—Smallpox Control.—It was 153 years ago—to be exact, May 14, 1796—that the first person was artificially immunized against smallpox. The "guinea pig" was an 8-year-old boy whom Dr. Jenner on that day inoculated with cowpox and two months later with virulent smallpox to prove the boy was rendered immune. Among the great discoveries of history, this one stands at the top.

The Effect of Streptomycin on Listeria

M. L. GRAY, A.B., H. J. STAFSETH, D.V.M., Ph.D., and FRANK THORP, JR., D.V.M., Ph.D.

East Lansing, Michigan

THE EFFECTS of various therapeutic agents in treating infections with members of the genus Listeria have been reported. Porter and Hale[4] showed that sulfanilamide and sulfapyridine were valuable in treating Swiss mice experimentally exposed to Listerella.* Graham *et al*[2] reported the use of sulfanilamide in field cases of listerellosis. Their work indicates that this drug was of little or no value in naturally occurring cases of the disease. Foley, Epstein, and Lee[1] reported that Listerella cultures will grow freely in 40 times the concentration of penicillin necessary to inhibit other gram-positive organisms. Handelman *et al*[3] reported apparent recovery from Listerella meningitis in a 6-week-old infant treated with sodium sulfadiazine after penicillin therapy had failed. This review would justify further search for a satisfactory treatment of this disease as it continues to cause losses among sheep and cattle and is a menace to the health of those who must care for them.

Accordingly, tryptose agar plates containing 0.5, 1.0, 3.0, 6.0, and 10.0 units of streptomycin (hydrochloride) were prepared. Seven cultures of ovine origin and eight cultures of bovine origin of *Listeria monocytogenes* were used. These stock cultures were maintained on tryptose agar slants. Their age ranged from 2 years to recently isolated cultures. They were transferred through nutrient broth daily for three days prior to exposure to the antibiotic agent. A 1.0-mm. platinum loop was used to inoculate the plates. These were incubated for twenty-four hours at 37 C. It was observed that most of the cultures grew well on plates containing 0.5 unit of streptomycin but were almost completely inhibited by 1.0 unit. Incubation for an additional twenty-four hours showed a marked growth of Listeria at 1.0 unit and slight growth at 3.0 units. The cultures containing higher concentrations were negative. Because of the similarity of results, four cultures of ovine and four cultures of bovine origin were chosen for further study. Colonies were picked from the plates containing 1.0 unit and transferred to plates containing 3.0 and 6.0 units. Colonies were then picked from the 3.0- and 6.0-unit plates and transferred to 10-unit plates. By this adaptive procedure, it was possible to produce good growth in twenty-four hours on the 10-unit plates. Tables 1, 2, and 3 show the results up to 6.0 units after 24-hour incubation periods at 37 C. An additional twenty-four hours of incubation invariably produced sufficient growth for transfer to a higher concentration of streptomycin.

TABLE 1—Unexposed Cultures Transferred from Nutrient Broth

Culture	Units of streptomycin			
	0	0.5	1.0	3.0
2	++++	+++	—	—
4	++++	+++	T	—
6	++++	+++	T	—
11	++++	+++	+	—
10	++++	+++	—	—
13	++++	+++	+	—
15	++++	+++	T	—
16	++++	+++	—	—

T = Trace.

Cultures 2, 4, 6, and 11 are of ovine origin; 10, 13, 15, and 16 of bovine origin.

TABLE 2—Colonies Picked from Plates Containing 0.5 Unit of Streptomycin

Culture	Units of streptomycin			
	0	0.5	1.0	3.0
2	++++	++++	+++	—
4	++++	++++	++	—
6	++++	++++	++	—
11	++++	++++	++	+
10	++++	++++	+	—
13	++++	++++	+	—
15	++++	++++	++	—
16	++++	++++	+	—

During this study, it was observed that there was an apparent individual resistance to streptomycin. Where discrete colonies could be observed, there was a marked difference in colony size. This had never been

From the Animal Pathology Section (Gray and Thorp), and the Bacteriology and Public Health Section (Stafseth), Michigan Agricultural Experiment Station, East Lansing.

This paper was presented at the 48th general meeting of the Society of American Bacteriologists, May 11-14, 1948, Minneapolis, Minn.

Published with the permission of the director, Michigan Agricultural Experiment Station, as journal article 1019 n. s.

The authors express their appreciation to Merck and Co., Rahway, N. J., for the streptomycin used in this study.

*Listeria is the newer name for Listerella.

observed in growth on plain tryptose agar (*see* fig. 1).

One of the large and one of the small colonies were picked from a plate containing 1.0 unit and from a plate containing 10.0 units and transferred to broth and plain agar slants, incubated for twenty-four hours, and plated on streptomycin plates. The results are shown in table 4.

These exposed cultures were then transferred daily for seven days through broth and on tryptose slants and reëxposed to the same concentrations of streptomycin. The results were essentially the same. These cultures were then left without transfer at 4 C. and 21 C. for six weeks. Reëxposure to streptomycin yielded approximately the same results.

In vivo tests were carried out, using rabbits. The streptomycin used was the calcium chloride complex. In each experiment, 1 animal was treated at exposure, 1 twelve hours following exposure, and 1 was left as an untreated control. Temperatures were recorded at eight-hour intervals the first day and every twenty-four hours thereafter. Leucocyte and differential counts were taken at 24-hour intervals. Dosage ranged from 2,000 units per day per rabbit to 150,000 units per day per rabbit. Because only 21 rabbits were used, no definite conclusions could be drawn. However, in each case the animal treated initially showed the least temperature rise, but in 2 cases, this animal was the first to die. The monocytosis following infection was inconclusive, but tended to be somewhat lower in the treated animals.

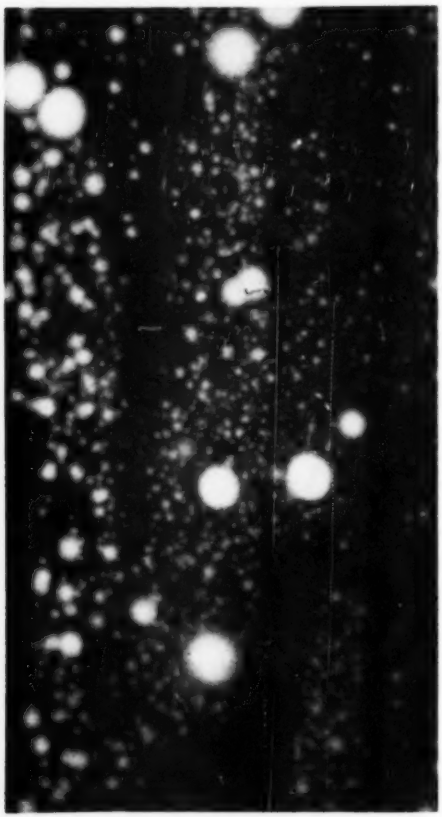


Fig. 1—Difference in colony size of a pure culture of Listeria exposed to 3 units of streptomycin, incubated at 37 C. for 48 hours. x 10.

TABLE 3—Colonies Picked from Plates Containing 1.0 Unit of Streptomycin

	Units of streptomycin			
Culture	0	1.0	3.0	6.0
2	++++	++++	++	T
4	++++	++++	++	+
6	++++	++++	+	T
11	++++	++++	+++	+++
10	—	++++	T	—
13	++++	++++	—	—
15	++++	++++	+	—
16	++++	++++	+*	+

TABLE 4—Effect of Colony Size After Exposure to Streptomycin

	Units of streptomycin				
Cultures	0	1.0	3.0	6.0	10.0
15 LV	++++	++++	+++	+	+
15 SV	++++	++++	T	—	T
13 LII	++++	++++	—	—	—
13 SII	++++	++++	—	—	—
13 control	++++	T	—	—	—

LV = large colony from 10 units of streptomycin; SV = small colony from 10 units; LII = large colony from 1 unit; SII = small colony from 1 unit.

The results of this study would suggest that streptomycin is contraindicated in Listeria infections. The organisms are initially inhibited but very rapidly develop a fastness for the drug. This adaptation may become a permanent characteristic of the exposed cultures.

SUMMARY

Both *in vivo* and *in vitro* tests were carried out to determine the effect of streptomycin on *Listeria monocytogenes*. The results of the study would suggest that streptomycin is contraindicated in Listeria infections. The organisms are initially in-

hibited but very rapidly develop a fastness for the drug.

References

[1]Foley, E. J., Epstein, J. A., and Lee, S. W.: Effectiveness of Penicillin on Listerella. J. Bact., *47*, (1944):110.

[2]Graham, R., Levine, N. D., and Morrill, C. C.: Listerellosis in Domestic Animals. U. of Ill. Agric. Exper. Sta. Bull., (1943): 499.

[3]Handelman, N. I., Rotondo, C. C., Scott, E. P., and Knighton, E. T.: Listerella Meningitis. J. Pediat., *28*, (1946):210-213.

[4]Porter, G. R., and Hale, W. M.: Effect of Sulfanilamide and Sulfapyridine on Experimental Infections with Listerella and Erysipelothrix in Mice. Proc. Soc. Exptl. Biol. and Med., *42*, (1939):47-50.

Classify Canine Encephalitides

McIntire, Travan, and Montgomerie (*Vet. Rec.*, 60, (1948): 635-638) divided encephalitides of dogs into six groups, observed their relationship to hard-pad disease, and prescribed treatment. Only two of the six groups were attributed to Carré's virus. (The number of cases investigated and the methods pursued are not given.)

Group 1a embraces the animals showing a nervous involvement occurring toward the end of several weeks following typical distemper. Gross examination at postmorten often showed only ingestion of the brain, a few tiny hemorrhages, and excess of cerebrospinal fluid. Destruction of nerve cells was seen on histologic examination. Interstitial pneumonia with infiltration of polymorphonuclear leucocytes occured. The injection of emulsions of the brain into ferrets produced distemper in nine to fifteen days. The nervous symptoms were probably due to secondary toxemia or septicemia.

Group 1b cases were due to a virus differing from Laidlaw-Dunkin [Carré's] virus. It was no respecter of age, and there was a sparse, watery, purulent catarrh characteristic of distemper, with enlarged tonsils and cervical lymph nodes. Severe diarrhea was common and hardening of the foot pads (podokeratosis) with gross thickening was evident. Besides, there was pulmonary congestion, severe inflammation of the duodenum, marked congestion of the spleen and liver, hemorrhagic cystitis with demyelinating encephalitis in the peduncles and folds of the cerebellum, vasculoendothelial proliferation with histocytic cuffing, glial proliferation and swelling with intranuclear acidophilic inclusions in the glial cells, histocytes, ependyma cells and meningeal endothelian cells, but but not in the vasculoendothelium. The horny layer of the foot pads was greatly thickened. Ferrets inoculated with emulsion of foot pad, brain, lung, or spleen developed a disease resembling distemper in seventeen to thirty-two days.

Group 2 cases were similar to those of group 1b except that ferrets were not susceptible to Seitz tissue filtrates, the organs and foot pads remained normal, and no inclusion bodies were found in the lungs.

Group 3 were cases of encephalitis (no respiratory or general symptoms) that could not be transmitted to dogs or to ferrets.

Group 4 were cases of protozoal encephalitis. One case was attributed to an unidentified species of Toxoplasma.

Group 5 were miscellaneous cases due to nutritional, toxic, and helminthic causes.

TREATMENT

Treatment has been hampered by inability to reproduce the disease experimentally, and to study it under controlled conditions. When damage to the nervous system was severe, functional recovery never occurred. The symptoms remained. Antiserums were of no value in distemper cases already showing nervous symptoms, except that intrathecal injections of "anti-hard-pad" serum brought about improvement in some dogs of group 1b showing nervous symptoms.

The general recommendations for prevention and control are: Provide adequate rations and avoid farinaceous foods made from agenized flour. Give crude cane sugar molasses for its pyridine and vitamin B_1 content. Inject strong liver extract intramuscularly in 2-cc. doses on two successive days.—*D. A. Schmidt, D.V.M., Minnesota.*

Comment.—This abridgment, in the manner presented, should be considered only as a confirmation of the well-known fact that encephalitides of dogs are not as exclusively a part of the distemper syndrome as formerly supposed. Atypical distemper complicated with podokeratosis, which the authors could not pass through ferrets, remains in the field of controversy. The elusive virus of Carré has strange ways and hideouts. Awaiting frank explanation is the method of hyperimmunizing dogs to produce hard pad antiserum. —EDITORS.

Silver Fox Farming.—In 1939, there were 3,000 Silver Fox farms in the United States and they were producing around 350,000 pelts annually. The 1949 survey of that industry shows that there are fewer than 500 such farms scattered over the country, and the annual production has dropped to about 50,000 pelts.

An Outbreak of Ovine Listeriosis in Utah

In the United States, listeriosis of sheep is being recognized with increasing frequency. Since Ten Broeck's[1] isolation from sheep in New Jersey, its occurrence has been reported in many states. Among these are New York, Connecticut, Illinois, and Iowa[1] and Wisconsin,[2] California,[3] Colorado,[4] Oregon,[5] and Minnesota.[6] Early reports of this disease were limited to the eastern and central United States. The first report of its occurrence west of the Mississippi Valley was in 1941 when Hoffman[3] described an outbreak in sheep near Dixon, Calif.

This paper discusses an outbreak in a herd of 200 sheep maintained in winter feedlot near Ogden, Utah. A search through available literature revealed no previous report from Utah.

On Jan. 12, 1948, the owner of this herd consulted one of the authors (F. R. M.) regarding some unexplained losses. Just prior to these losses, the sheep were fed alfalfa hay from a new stack which had been salted at the time of stacking with salt purchased as "war surplus." Because of the peracute nature of his losses, the owner was concerned as to the purity of the salt he had mixed with the hay, believing his losses due to chemical poisoning. At the time assistance was requested, 3 had succumbed and 4 more were ill. One of these was taken to the hospital (of F. R. M.) for observation and treatment.

At the onset of the disease, affected ewes were observed to remain isolated from the flock. Soon after this, symptoms of an encephalitis appeared, characterized chiefly by blindness, forced movements, circling and twitching of facial muscles. This was followed by extreme depression, paralysis, and coma. Death usually occurred within seventy-two to ninety-six hours after the first symptoms appeared. The ewe which was hospitalized succumbed the following day and was autopsied. Abdominal and thoracic viscera presented no gross lesions. Because of a symptomatology suggestive of listeriosis, the head was forwarded to the Utah State Health Department for bacteriologic examination.

A portion of the medulla oblongata was triturated in a sterile mortar and cultured on blood agar. After thirty-six hours of incubation, a considerable number of small, smooth, circular colonies of an organism characteristic of *Listeria monocytogenes* appeared. On staining, the organisms appeared as small gram-positive rods occurring singly and in short chains. A narrow zone of hemolysis was produced on human blood agar. The biochemical properties of this organism, in so far as tested, closely paralleled those described by Merchant.[1] Acid, but no gas, was produced from dextrose, salicin, and levulose in twenty-four hours. After seventy-two hours of incubation at 37 C., small amounts of acid were detected on maltose, lactose, xylose, and sucrose. No acid was produced from mannite, arabinose, inositol, dulcitol, or sorbitol. Indole and hydrogen sulfide were not produced; nitrates were not reduced to nitrites. The organism appeared to be nonmotile on motility medium incubated at 37 C., but a slight spreading was noted at 20 C. Peptone agar cultures gave a thin film of growth with a strong acid odor.

Of the 200 ewes, 7 were affected and died, all manifesting a clinical syndrome similar to the 1 from which *L. monocytogenes* was isolated.

On occasion, *L. monocytogenes* has been incriminated as the cause of a meningoencephalitis in man.[7-12] However, the role of infected animals in the epidemiology of human cases has remained obscure.[12] Of reported human infections, a few had either direct or indirect contact with animals.[7,8] It is interesting to note that 3 of the sheep which succumbed early in this outbreak were skinned by herdsmen, using no precautions, and yet no infection resulted.

SUMMARY

An outbreak of listeriosis among sheep in Utah is reported. *Listeria monocytogenes* was isolated in pure culture from 1 of the affected sheep. The physical and biochemical properties of the strain are described.—*H.G. Stoenner, D.V.M., Rocky Mountain Laboratory, Hamilton, Mont.: F. R. Mencimer, D.V.M., Ogden, Utah; and R. S. Foster, B.S., Salt Lake City, Utah.*

References

[1]Merchant, I. A.: Veterinary Bacteriology, 3rd ed. The Iowa State College Press, Ames, Iowa, (1946): 422-423.

[2]Spencer, G. R., Hoyt, H. H., and Whitehair, C. K.: Listerellosis Occurring in Wisconsin. J.A.V.M.A., *105*, (1944):195-197.

[3]Hoffman, H. A.: Observations on a Case of Listerellosis in Sheep. J.A.V.M.A., *98*, (1941):234-235.

[4]Cross, F.: New Sheep Disease Diagnosed by Station. Colorado Farm Bull., 3, (1941):9.

Senior assistant veterinarian (Stoenner), Communicable Disease Center, Public Health Service, Federal Security Agency, Atlanta, Ga., on loan to the Utah State Department of Health, (present address, Rocky Mountain Laboratory, Hamilton, Montana); practitioner (Mencimer), Ogden, Utah, and bacteriologist (Fraser), Utah State Department of Health, Salt Lake City.

[9]Muth, O. H., and Morrill, D. R.: An Outbreak of Listerellosis in Oregon Sheep. J.A.V.M.A., *100*, (1942):242-245.

[4]Pomeroy, B. S., Fenstermacher, R., and Andberg, W. G.: Listerellosis of Sheep and Cattle in Minnesota. Cornell Vet., *33*, (1943):269-273.

[7]Handelman, N. I., Rotondo, C. C., Scott, E. P., and Knighton, H. T.: Listerella Meningitis. Report of a Case with Recovery. J. Pediat., *28*, (1946): 210-213.

[8]Burn, C. G.: Clinical and Pathological Features of an Infection Caused by a Pathogen of the Genus Listerella. Am. J. Path., *12*, (1936):341-348.

[5]Wright, H. A. and MacGregor, A. R.: A Case of Meningitis Due to *Bacterium monocytogenes*. J. Path. and Bact., *48*, (1939):470.

[10]Poston, M. A., Upchurch, S. E., and Booth, M.: Listerella Meningitis. J. Pediat., *11*, (1937):515.

[11]Carey, B. W., Jr.: Infection with an Organism of the Genus Listerella. J. Pediat., *8*, (1936):626.

[12]Kaplan, M. M.: Listerellosis. New England J. Med., *232*, (1945):755-759.

The Antihistaminic Cliche—Phenergan

Since definite relationships between the perverted behavior of histamine and any clinical entity of animals remain to be established, the moment is opportune to warn practitioners not to be carried away by the deluge of material published on antihistaminic therapeutics.

The latest antihistaminic brought out for use in veterinary medicine is *phenergan*, a fraction of the polyanthelmintic phenothiazine to which antihistaminic properties have long been attributed. Chemically, the new substance is dimethylamino-2-methyl-1-ethyl-N-dibenzo-parathiazine hydrochloride. An outstanding journal of veterinary medicine (abroad), in a classical (looking) article, gives it an important place in the treatment of a group of unrelated sporadic ailments of largely unknown pathology that tells about all that can be said about the "antihistaminic cliché." On a theoretical basis propped up by some clinical reports, the new agent is recommended for:

1) Founder, periodic ophthalmia, azoturia, and urticaria of horses.

2) Pulmonary and cutaneous edema in dogs, cattle, horses, and swine.

3) Hemodynamic perturbations: hypertension, vaso-dilation, vaso-constriction, mortal asphyxia.

4) Anaphylactic states: asthma, heaves, eczema, pruritus, serum shock, photodermatitis, blue nose disease of cows.

This miscellaneous group of morbid states is sufficient to show that scientific antihistaminic therapy lies in the offing. The object here is not to discredit antihistaminic therapy but to say that their use up to now remains empirical.

A Physician Asks Recognition for Veterinarians

The veterinarian of today is among the best-educated citizens of his community.... Veterinarians are among our best public health workers; no board of health, whether it be in a village, a great municipality, county, state, or nation, should be without one or more veterinarians on its staff.... Although some of the world's greatest strides in public health have been made by veterinarians, wherever I go I am distressed that so few people know about them. It appears that not more than 5 per cent of physicians and nurses know that you have eradicated such diseases as glanders, have nearly eradicated tuberculosis from the cattle of the United States, and have other diseases well on the way to eradication.... I have long been hopeful that the veterinary and medical professions would enter into a joint effort to inform the world of the tremendous strides that have been made in disease control, which have added so many years of useful, happy, and productive living. If the public everywhere could be placed in possession of this information, it is probable that support would follow to hasten the solution of remaining problems.—*J. Arthur Myers, M.D., before the Ohio State University Conference for Veterinarians, June* 15-17, 1949.

Bee Stings

On the average, a honey bee (*Apis mellifica*) ejaculates 0.3 cc. of venom into the tissues when it stings a person. The venom is a clear, colorless fluid, secreted by two glands, one secreting an acid and the other an alkaline fluid. The mixture, in the form ejaculated, is acid to litmus. It exerts three actions: (1) produces inflammation, (2) is a convulsant, and (3) is a stupefying and paralyzing substance.

Due to personal idiosyncracies, the reaction to bee stings varies in severity. A number of stings may cause some persons no more inconvenience than so many painless papules. On the other extreme are persons who have died in a few minutes from a single sting. Between these extremes are symptoms of intense local pain, urticaria and other eruptions, motor weakness, headache, spasms, colic, dyspnea, ocular paralysis, convulsions, and shock. Local release of histamine is said to be a factor. The modern treatment is the administration of antihistaminics. Strauss (*J.Am.M.A.*, June 18, 1949) recommends thephorin in the form of a 5 per cent ointment.

Parasite Control on Large Haciendas

DOUGLAS F. WATSON, V.M.D.

Pachacayo, Peru

THE *Sociedad Ganadera de Junin* consists of some 12 large haciendas in the central part of Peru in the Andes range at an altitude of 10,000 to 15,000 feet. Owned and operated by the Cerro de Pasco Copper Corporation, an American mining company, and covering a million acres, they produce primarily meat, milk, butter, and wool. At present, they have 15,000 cattle, 175,000 sheep, 800 hogs, and 2,000 horses and mules.

In the first months of 1947, the writer initiated a series of studies to determine the cause of the high mortality. All available animals that died were subjected to autopsy, and all parasites found were identified with the aid of personnel of the *Facultad de Medicina Veterinaria* in Lima, Peru. These studies revealed that heavy infestations with internal and external parasites were extremely important, both directly and indirectly, to the heavy mortality. *Melophagus ovinus*, Linognathus sp., and Argas sp. were seen externally. Internal parasites were represented by species of Dictyocaulus, Trichostrongylus, Ostertagia, Haemonchus, Moniezia, Nematodirus, Bunostomum, Cooperia, Trichuris, Oesophagostomum, and Chabertia. Species of Cysticercus were found in hogs. In the body cavities, many hydatid cysts were seen.

CONTROL OF THE LIVER FLUKE

The liver fluke, *Fasciola hepatica*, causes many deaths as well as a high degree of liver destruction in animals. Its control is difficult, due to the existence of many swampy, wet areas which are ideal for the snail hosts. In this region, there is a rainy and a dry season.

In spite of the fact that the temperatures during the dry season may drop well below freezing, the snails appear to survive by burrowing into the mud. Drainage and copper sulfate distributed in the ponds and similar areas has been effective, in so far as we have been able to apply these measures. For many years, a mixture of carbon tetrachloride and mineral oil, 1:4, has been used to destroy the adult flukes in the liver. However, this appears to have a damaging effect on the liver over a period of time, and we have found that it is dangerous to use in pregnant or nursing ewes, since it may cause abortions and will completely dry up the nursing ewe resulting in starvation of the lamb.

It is sometimes necessary to treat large flocks of ewes with lambs that have been pasturing in an infested area, and we have found that hexachloroethane, as described and used by Olsen,[1] is an excellent drug for this purpose. It appears to have a high degree of safety and has no effect whatsoever on the milk of the nursing ewe. We have used this drug in 20-Gm. boluses on 10,048 ewes with excellent results. Like carbon tetrachloride, it appears to have no effect on the flukes that are migrating through the liver, attacking only those that have reached the bile ducts and gall bladder. Results of dosing cattle with hexachloroethane are equally good. Since all animals that are slaughtered pass through the killing floor, on these haciendas we have a good opportunity to check on infection and results of treatment. Fecal examinations are also made on representative lots of animals.

CONTROL OF PARASITES IN SHEEP

As mentioned, the mixture of carbon tetrachloride and oil is the only vermicide that has been used in this part of Peru for many years. While the results in the control of the fluke are satisfactory, its efficacy against the many other types of parasites leaves much to be desired. It, therefore, became necessary to prepare a mixture that would be most effective against the greatest number of types of parasites with which we must contend.

In view of the large number of animals to be dosed, there were economic factors to be considered. Further, it was our desire to arrive at some mixture, or some program of control, that would eliminate too frequent handling, which involves the moving of animals long distances to corrals with consequent loss of weight and condition. After some months of experimenting, using old infected animals destined for slaughter, we arrived at a mixture which satisfied all the requirements we had in mind. This contains 2 per cent each of copper sulfate

Chief veterinarian, *Sociedad Ganadera de Junin*, Cerro de Pasco Copper Corp., Pachacayo, Peru.

[1]Olsen, O. W.: Hexachlorothane-Bentonite Suspension for Controlling the Common Liver Fluke. . . Am. J. Vet. Res., *8*, (Oct., 1947):353-366.

and nicotine sulfate and 12.5 Gm. of phenothiazine per ounce of completed mixture. The dose is 2 oz. (25 Gm. of phenothiazine) for adults. This is sufficient, since animals at this altitude do not reach the weights seen in other parts of the world. The dosage for young animals is calculated in accordance with their weight.

The drug is given with a 2-oz. dose syringe to which is attached a Whitlock dosing nozzle, 18 in. long for adults and 12 in. for lambs. An assistant holds the animal's head between his legs, at the same time pressing back the animal's chest with the back of his knees, thus putting the head and neck in line. In this manner, the operator introduces the nozzle into the mouth, and, because of its weight it is easily passed to the stomach where the contents of the syringe are discharged. After a little practice, it is possible to dose thousands of sheep without untoward results. It is necessary to pass the nozzle to its full length, for if the contents are discharged in the esophagus, the fluid elements of the mixture may pass to the stomach, leaving a mass of phenothiazine to occlude the esophagus. Death usually results from severe bloating. Other losses have resulted from faulty introduction of the dosing nozzle, the mixture being injected into the trachea, or from fractures of the pharynx as a result of improper restraint at the time the nozzle is introduced into the mouth. During the last year, we have dosed 75,880 animals with an average loss of 1 per 3,000.

Some animals may suffer from the effects of the nicotine as evidenced by staggering. Administration of alcohol, via the dosing nozzle, readily corrects this condition. We have had many opportunities to check on the efficacy of this mixture and have found that it gives excellent results, in most cases cleaning out all the parasites, with the exception of flukes and lungworms. In many cases, we have observed that it does not destroy all Trichuris sp., but they do not seem to be as destructive as other species, against which the results have been so marked.

This mixture has been used on lambs 4 months of age with equally good results. In the first year of its use, we found it necessary to administer 3 doses per animal, but in the past year the animals were dosed at shearing time and did not receive the drug again till this year's shearing. During the year, all animals have access to a salt mixture, containing 1:10 phenothiazine and salt with sulfur, iodine, calcium, phosphorus, and cobalt. This mixture, packed out to the animals by mule and burro, is placed in old tires which have been cut in half, forming two troughs. These are easily cleaned and transported, important items here where the animals are moved from place to place and motor transportation is lacking.

There was marked increase in the quantity of meat and wool produced after one year on this program, in spite of a bad year, the rainfall being less than half of normal. The mortality was lowered more than 90 per cent on most of the haciendas.

Young lambs, 1 to 6 months of age, suffer from heavy infections of *Moniezia expansa*. They are dosed with 7.5 per cent of copper sulfate solution, to each gallon of which is added 2 to 4 oz. of nicotine sulfate. The dose is 5 cc. for lambs and is given with a Shikles outfit fitted to a 10-cc. syringe and connected to a 2-gallon bottle. Two doses are given to the lambs and, at 4 months, they receive the standard mixture containing phenothiazine, copper sulfate, and nicotine sulfate previously described.

At first, we fasted the animals overnight prior to dosing and did not permit food or water for six hours after administering either type of medicament, but we no longer follow this practice, since it slows down the work and there appears to be no difference in the efficacy of the treatment.

CATTLE PARASITES

Cattle suffer from essentially the same types of parasites, and the same mixture is used, with the exception of the nicotine which is toxic for cattle. The animals are drenched with the drug, the phenothiazine being used as the criterion for the quantity administered.

We are, at present, conducting some work on the feasibility of adding hexachloroethane to our standard mixture. To date, some 300 known infected animals, *i.e.*, with fluke and other intestinal parasites, have been purchased, dosed, and then killed and examined to check the results. The mixture is given in the same manner as described for sheep and, so far, has given excellent results and shows no toxic effects. Work is continuing with this mixture, and we hope to be able to cite more definite results, backed by more extensive experimentation.

EXTERNAL PARASITES

The control of *Melophagus ovinus* is of major importance, since the heavy infestations common to this region stain the wool, lowering its value appreciably. Cresol

had been the common dip in this area, but it requires repeated application. Cubé had also been used, and, while inexpensive, has a deleterious effect on the wool, making it brittle and tender.

Therefore, in 1947, we initiated the use of 0.5 per cent DDT on the most heavily infested hacienda in order to study its effect. Six weeks after shearing, 4,250 sheep were dipped, and one year later, they were still free of ticks. There was no effect whatsoever on the wool. In 1948, all sheep and cattle were dipped in 0.5 per cent DDT and, while some flocks had a few ticks a year later at shearing, the majority were clean. The shepherds here are permitted to have their personal animals with our herds, and these form a source of reinfestation.

In the past year 169,746 sheep, 17,208 cattle, and 2,559 hogs were dipped in the same mixture. Cattle and hogs do not retain the DDT in the coat as long as sheep and must be dipped more frequently, but we find it most effective. At present, we are using DDT and benzene hexachloride in water and with the oil emulsion on an experimental basis.

SUMMARY

Some of the methods of parasite control that have been found safe, efficient, and economical in day-to-day operations on a large scale in a commercial enterprise are summarized. We have found these methods successful against infections and infestations of parasites almost unbelievable in variety and numbers.

Foot-and-Mouth Disease Virus Propagation

The method of cultivating foot-and-mouth disease virus in tissue explantations, as developed by Frenkel, has been used in the State Institute for Veterinary Research, Amsterdam, The Netherlands, for a number of years. It was started in surviving embryonic bovine, ovine, and porcine skin tissue. Later, a method of cultivating the virus in explanted epithelial tongue tissue, collected from normal adult cattle, was developed at this Institute. By this later method, mass production of virus for vaccine preparation for experiments now in progress has been accomplished.

Recognizing the necessity for a source of supply of susceptible tissue from a country free of foot-and-mouth disease, the senior author proposed that bovine tongue epithelial tissue be shipped from the United States to the State Institute for Veterinary Research at Amsterdam, The Netherlands, and to the State Veterinary Research Institute for Virus Diseases at Lindholm Island, Denmark, for foot-and-mouth disease virus propagation.

The stratum germinativum epithelium of the tongue of adult, normal cattle was collected in Baltimore, Md. The tissue, in 4-Gm. amounts per bottle containing 25 cc. of Tyrode's solution and a total of 1,000 units of penicillin, was packed between containers of frozen water and well insulated for shipment by air express. The time from harvest of the epithelium in Baltimore to seeding with previously passaged tissue culture virus varied from three to nine days.

Twelve serial passages of type A foot-and-mouth disease virus (tissue culture propagated) were completed at the Amsterdam Institute on such tissues collected by U.S. Bureau of Animal Industry personnel and shipped from the United States. The titer of the original seed virus was 1 : 100,000 in cattle. The titer of the twelfth serial passage of the virus was 1 : 405,000 in cattle.

Dr. Erik Fogedby, director of the Danish Institute, with the assistance of Dr. Niels Jacobson, completed 11 duplicate serial passages of the type A virus (tissue culture propagated) on tongue epithelial tissue shipped from the U.S.A.

With one exception, titrations of the virus were made on guinea pigs and titration of the first passage of each series was limited to the 10^{-3} dilution to determine only if the virus was living. On series 1, the eleventh passage of the virus titrated 10^{-6} and the tenth passage of this series was $10^{-5.6}$ on cattle.

In series 2, titration of the eleventh passage was 10^{-2}; however, nine days had elapsed from the time the tissue was harvested until it was inoculated. Passage 10 yielded a 10^{-4} titer and the tissue was six days old. Passage 9 yielded a titer of 10^{-6} and the tissue was only four days old.

At both institutes, Baker's solution was the medium in which the epithelial tissue was placed for virus propagation.—*H. S. Frenkel, Amsterdam, The Netherlands; H. W. Dunne, D.V.M., and O. L. Osteen, D.V.M., Washington, D.C.*

Dr. Frenkel is director of the State Institute for Veterinary Research, Amsterdam, The Netherlands. Drs. Dunne and Osteen are with the Bureau of Animal Industry, USDA, Washington, D.C.

The miracle drug for treating individual cases of mastitis is yet to be discovered.—*F. H. Fox, D.V.M., New York.*

Removal of the Fringed Tapeworm from Sheep

J. F. RYFF, D.V.M., RALPH F. HONESS, B.S., M.S., and H. L. STODDARD, D.V.M.

Laramie, Wyoming

IN SETTING up an experiment to evaluate the anthelmintic properties of some common worming agents and some new products, ten groups of 20 sheep each were employed. While dependence was placed on fecal egg counts, 2 sheep from each group were also sacrificed for a direct examination of the number of parasites surviving after treatment. Varying numbers of the fringed tapeworm *Thysanosoma actinoides* were rather consistently recovered from all the sheep except those from the group treated with 50 cc. of a 20 per cent suspension of bis (5-chloro-2-hydroxyphenol) methane.* Three sheep killed at the start of the experiment harbored 12, 7, and 19 fringed tapeworms, respectively; 2 untreated sheep destroyed two weeks later when the treated sheep were examined had 29 and 0 tapeworms. Neither of 2 treated with bis (5-chloro-2-hydroxyphenol) methane had any; lead arsenate-treated sheep had 5 and 75; copper sulfate, nicotine sulfate-treated sheep had 25 and 22; phenothiazine suspension-treated sheep had 24 and 2; tetrachlorethylene-treated sheep had 0 and 27; n-butyl chloride-treated sheep had 2 and 5; and phenothiazine (1) and salt (7) sheep had 39 and 31; sulfaquinoxaline**-treated sheep had 0 and 22; and quaternary ammonium compound-treated† sheep had 21 and 0 fringed tapeworms respectively.

Later, 2 sheep which were presented for diagnosis were found to be harboring considerable numbers of the fringed tapeworm. Due to the damage to the liver and pancreas by these parasites, it was felt that the tapeworms were contributing to the poor condition of the sheep. Two more sheep in comparable condition were secured from the same ranch and treated with bis (5-chloro-2-hydroxyphenol) methane. When autopsied forty-eight hours afterward, no tapeworms were found.

In order to arrive at a more precise evaluation of the effectiveness of this drug, sheep were secured from this latter ranch and from three others. A muslin apron arrangement was applied to these sheep to catch the feces expelled. The feces so collected were washed in water, the fecal pellets removed, and the remainder screened and washed. Screenings were then examined for tapeworm proglottids. As the proglottids are usually on the outside, this method was thought to give satisfactory recovery of all those discharged. As can be understood, the number of proglottids secured would not necessarily indicate the degree of infection, but their presence would definitely denote tapeworm infection. Aprons were changed twice a day, and the total amount of feces expelled for five consecutive days was examined.

RESULTS OF EXPERIMENT

For each sheep treated, an untreated sheep was also killed and examined. Sheep 759 which passed 4 Thysanosoma and 52 Moniezia proglottids in 5 days, when autopsied, had 28 Thysanosoma, chiefly in the bile ducts, and 1 Moniezia. Sheep 788, passing 5 Thysanosoma and 74 Moniezia proglottids, when killed forty-eight hours after receiving 10 Gm. of teniathane, had only 1 fringed tapeworm. Sheep 915 passed only 1 Thysanosoma proglottid but had 2 Thysanosoma in the liver and 2 in the intestine. Sheep 917 passed 76 Thysanosoma proglottids and forty-eight hours after treatment with 50 cc. of diphenthane-70, 20 per cent suspension, 2 tapeworms were found in the liver and 1 in the intestine.

Sheep 787 discharged 33 Thysanosoma proglottids in 5 days and 7 fringed tapeworms were recovered. Sheep 790, which passed 59 Thysanosoma proglottids, was treated with 10 Gm. of teniathane and in forty-eight hours, no tapeworms could be recovered. Sheep 921 passed 8 Thysanosoma proglottids and 12 tapeworms were found. Sheep 925 passed 4 Thysanosoma and 1 Moniezia proglottids. When killed seventy-two hours after receiving 50 cc. of diphenthane-70, 20 per cent suspension, neither type of tapeworm was found. Fifteen Thysanosoma proglottids were recovered from sheep 789 and 1 fringed tapeworm was found when the animal was killed. Sheep 924 passed 169 Thysanosoma proglottids, but seventy-two hours after 50 cc. diphenthane-70, 20 per cent suspen-

From the Wyoming State Veterinary Laboratory (Ryff and Stoddard); and head, Department of Parasitology (Honess), University of Wyoming and Wyoming Agricultural Experiment Station, Laramie.

*Supplied by Pitman Moore Co., Indianapolis, Ind., as diphenthane-70, 20% suspension, and also available as teniathane, 0.5 gr. tablets.

**Supplied by Merck and Co., Rahway, N. J.

†Supplied by Fort Dodge Laboratories, Inc., Fort Dodge, Iowa.

sion, was given, no tapeworms were found.

Sheep 928 which had expelled 94 Thysanosoma and 308 Moniezia proglottids, on autopsy had 10 Thysanosoma, 5 of which were in the bile duct and gall bladder, and 2 Moniezia. Sheep 926 passed 115 Thysanosoma and 232 Moniezia proglottids, but seventy-two hours after treatment with 50 cc. diphenthane-70 suspension, no tapeworms could be found. Sheep 800 passed 93 Thysanosoma proglottids and when killed had 7 fringed tapeworms. Sheep 798 discharged 30 Thysanosoma and 1 Moniezia proglottids, and four days after administration of 50 cc. of diphenthane-70, no tapeworms were recovered.

As indicated, *Thysanosoma actinoides* were recovered from only 2 of the 7 treated sheep. In 1 case, only 1 parasite was found, and this was quite low in the intestine, suggesting some effect by the drug. The period of forty-eight hours between treatment and examination might also explain the recovery of Thysanosoma from sheep 917, as the drug was administered without any preliminary fasting. While emphasis was placed on the effect on the fringed tapeworm, this also indicates promise against the broad tapeworm.

RESULTS IN FIELD

There was one opportunity to try this drug in the field. Examination of several sheep from one ranch indicated a heavy parasite infection, chiefly of Moniezia. Each of 106 sheep was given 1 Gm. of lead arsenate, and 92 were given 50 cc. of a 20 per cent suspension of diphenthane-70. No toxicity was noted, and a good clinical response was recorded—so good that in spite of a bad winter, the sheep were thought to be in better condition than they had been for years, and the owner was reluctant to part with any sheep to check the effectiveness of treatment.

The dosage of 10 Gm. of teniathane or 50 cc. of 20 per cent suspension of diphenthane-70 was arbitrarily selected and given to all sheep whether lambs or adults. Less than this dosage might be adequate, but, on the other hand, no toxicity was noted. One sheep given 100 cc. of 20 per cent suspension and 2 given 150 cc. showed no ill effects; these were adults weighing about 125 lb. One sheep given 450 cc. of 20 per cent suspension divided in 2 doses, forty-eight hours apart, died three days after the last dose, but this amount is much above the required level.

SUMMARY

Using the proglottids discharged over a period of five days as an indication of Thysanosoma infection, 5 of 7 sheep treated with 10 Gm. of bis (5-chloro-2-hydroxyphenyl) methane (either as 10 Gm. of teniathane or 50 cc. of 20% suspension of diphenthane-70) were completely rid of tapeworms; whereas the 7 controls retained both Thysanosoma and Moniezia. No Thysanosoma were recovered from 2 sheep treated with the drug, although they were found in 17 of 21 sheep that were untreated or dosed with various other agents. Clinical use on 92 sheep indicated an apparently beneficial effect against Moniezia with no toxicity from a dosage of 50 cc. of 20 per cent suspension.

Streptomycin in Canine Leptospirosis

Controlled experiments at the University of California have shown that streptomycin is superior to penicillin in treating canine leptospirosis (*Proc. Soc. Exptl. Biol. and Med.*, 70, March, 1949: 450-452).

After observing that treatment with penicillin promoted recovery without preventing the carrier state, Brunner and Meyer used streptomycin on hamsters and dogs with these results: (1) Kidneys of 18 inoculated hamsters were sterile two days after streptomycin treatment was started; (2) dogs responded likewise to streptomycin (daily dose of 40 mg./kg., intramuscularly, in oil and wax, for four to six consecutive days) instituted four to five weeks after inoculation with virulent cultures, infective organisms being destroyed in the kidneys and thus eliminating the carrier state; (3) the drug was equally effective against *Leptospira canicola* and *Leptospira icterohemorrhagiae* infections, both acute and chronic.

To prevent the spread of this disease among breeding animals, the authors recommended examination of the urine and, when infection is found, treatment with streptomycin (40 mg./kg., intramuscularly) for three to five days before breeding.

Histoplasmin Sensitivity

A comparison of the histoplasmin sensitivity of cattle and children in Kansas revealed (*Am. J. Pub. Health*, 39, June, 1949: 719-721) that histoplasmin reactors occur in cattle. The geographic distribution resembles that of histoplasmin reactors in human beings. The rates are quite similar in human beings and cattle of like age. It is deduced that men and cattle are both infected from the same outside source and that cattle do not constitute an important animal reservoir in the spread of the disease to human beings.

Infectious Equine Encephalomyelitis in the United States in 1948

(Abstracted from a report (dated May 31, 1949) by Dr. B. T. Simms, chief, United States Bureau of Animal Industry)

Although infectious equine encephalomyelitis was reported from 35 states during 1948 (2 more than in 1947), there were only 1,796 cases (as against 8,716 the previous year). This is the lowest number reported during the fourteen years that records have been kept by the U. S. BAI. September was the peak month.

The general pattern of distribution was about the same as in former years. South Carolina had 237 cases, Kansas 207. Only three other states had more than 100—Oklahoma 172, Florida 155, and Nebraska 109. Although only about 55,000 vaccinations were reported to the Bureau, it is estimated that about 257,000 animals were vaccinated with two doses. Twelve animals were reported to have contracted the disease after vaccination.

(See pages 182 and 183 for figure 2 and table 1.)

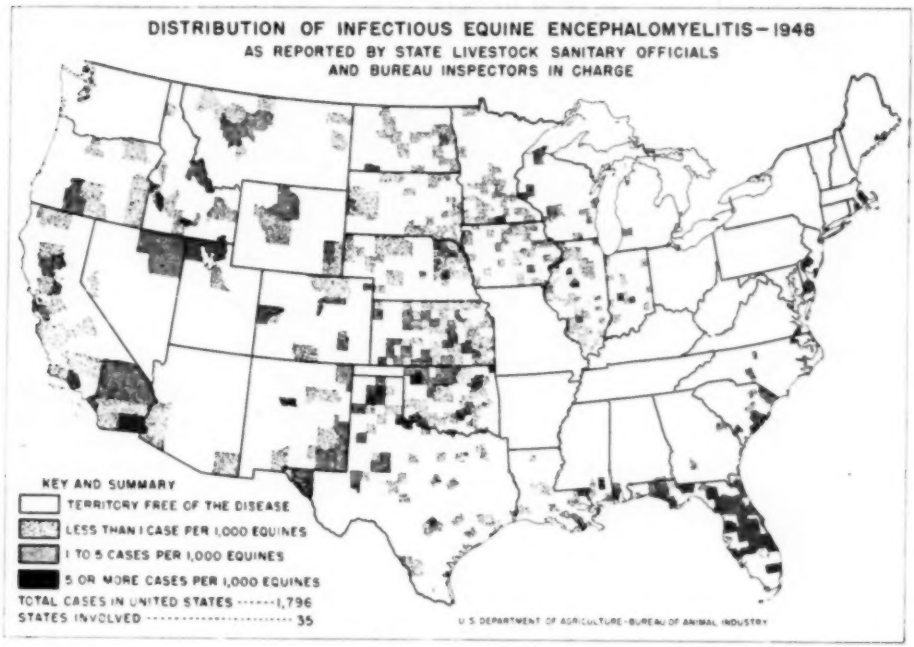
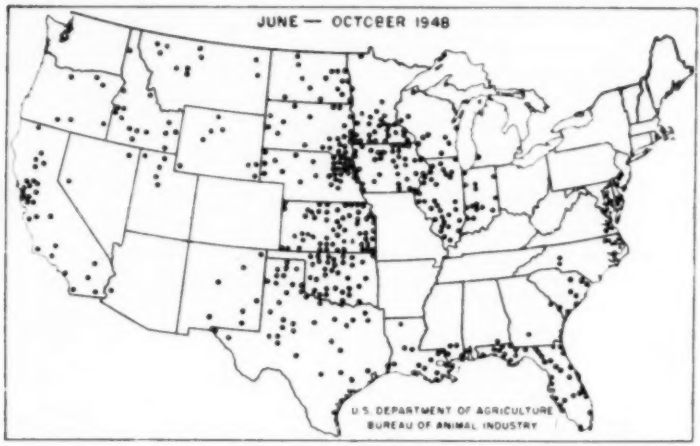


Fig. 1—Distribution and degree of incidence of infectious equine encephalomyelitis, 1948.

PRE-EPIZOOTIC PERIOD
CASES REPORTED FOR:

JANUARY	17
FEBRUARY	17
MARCH	5
APRIL	17
MAY	72
TOTAL	128



EPIZOOTIC PERIOD
CASES REPORTED FOR:

JUNE	135
JULY	172
AUGUST	553
SEPTEMBER	626
OCTOBER	128
TOTAL	1,614

POST-EPIZOOTIC PERIOD
CASES REPORTED FOR:

NOVEMBER	44
DECEMBER	10
TOTAL	54

Fig. 2—Distribution of reported cases of equine encephalomyelitis according to periods during 1948. Each dot represents a county in which 1 or more cases occurred during the period.

TABLE I—Infectious Equine Encephalomyelitis. Summary of Reports on Incidence and Mortality by States, 1948

State and division	Horses and mules in affected areas	Animals affected	Cases per 1,000 horses and mules	Total deaths	Deaths per 100 affected animals	Month of report of—	
						First case	Last case
Maine	—	0	—	0	—	—	—
New Hampshire	—	0	—	0	—	—	—
Vermont	—	0	—	0	—	—	—
Massachusetts	975	2	2.0	2	100	Sept.	Sept.
Rhode Island	—	0	—	0	—	—	—
Connecticut	—	0	—	0	—	—	—
New England	975	2	2.0	2	100	Sept.	Sept.
New York	—	0	—	0	—	—	—
New Jersey	5,745	9	1.6	9	100	July	October
Pennsylvania	—	3*	—	3*	—	Sept.	Sept.
Middle Atlantic	5,745	9	1.6	9	100	July	October
Ohio	—	0	—	0	—	—	—
Indiana	45,708	27	0.6	14	52	July	Sept.
Illinois	176,343	78	.0.4	41	53	Jan.	Dec.
Michigan	6,217	1	0.2	0	0	Sept.	Sept.
Wisconsin	74,171	16	0.2	3	19	June	October
East North Central	302,439	122	0.4	58	47	June	Dec.
Minnesota	194,719	50	0.3	14	28	May	Sept.
Iowa	197,803	66	0.3	14	21	May	October
Missouri	—	—	—	—	—	—	—
North Dakota	80,158	34	0.4	10	29	June	Sept.
South Dakota	119,121	53	0.4	13	24	May	October
Nebraska	175,206	109	0.6	21	19	May	Sept.
Kansas	271,040	207	0.8	52	25	Feb.	Nov.
West North Central	1,038,047	519	0.5	124	24	Feb.	Nov.
Delaware	6,829	7	1.0	7	100	May	October
Maryland	6,404	8	1.2	8	100	August	August
Virginia	4,473	9	2.0	8	88	July	August
West Virginia	—	0	—	0	—	—	—
North Carolina	11,470	15	1.3	12	80	Feb.	August
South Carolina	32,548	237	7.3	50	21	May	Dec.
Georgia	9,872	2	0.2	2	100	August	August
Florida	37,266	155	4.2	140	90	Jan.	Dec.
South Atlantic	108,862	433	4.0	227	52	Jan.	Dec.
Kentucky	—	0	—	0	—	—	—
Tennessee	—	0	—	0	—	—	—
Alabama	7,778	4	0.5	4	100	July	August
Mississippi	6,809	11	1.6	0	0	July	Dec.
East South Central	14,587	15	1.0	4	27	July	Dec.
Arkansas	—	0	—	0	—	—	—
Louisiana	52,347	37	0.7	36	97	July	Sept.
Oklahoma	209,334	172	0.8	43	25	Jan.	Dec.
Texas	127,177	88	0.7	20	23	April	Nov.
West South Central	388,858	297	0.8	99	33	Jan.	Dec.
Montana	38,701	32	0.8	4	12	July	Sept.
Idaho	74,769	53	0.7	19	36	Feb.	October
Wyoming	37,263	32	0.9	6	19	July	October
Colorado	61,477	45	0.7	16	35	April	Sept.
New Mexico	28,686	43	1.5	12	28	May	Sept.
Arizona	5,039	3	0.6	3	100	August	October
Utah	26,220	37	1.4	6	16	May	October
Nevada	17,553	13	0.7	1	8	August	Sept.
Mountain	289,708	258	0.9	67	26	Feb.	October
Washington	—	—	—	—	—	—	—
Oregon	38,619	47	1.2	15	32	July	Sept.
California	80,983	91	1.1	30	33	May	October
Pacific	119,602	138	1.1	45	33	May	October
Total or Average	2,268,823	1,796	0.8	638	35.5	Jan.	Dec.

*These animals were shipped from Oklahoma. Two were dead upon arrival; 1 died six to eight weeks later. They are not included in the total cases and deaths for the Middle Atlantic States, but are included in the total for all of the states.

Mastitis Control

F. E. MARTIN, V.M.D.

West Chester, Pennsylvania

DURING the past fifteen years we have been interested in the laboratory diagnosis and control of masitis in dairy cattle. Several thousand samples have been examined yearly. During this time we have tried every test proposed. In our hands, a slight modification of the standard Breed smear test has proved most practical.

It is not necessary nor desirable for every veterinarian to set up his own laboratory. One laboratory can handle the testing for a group of veterinarians more economically and with more uniform results than with each working independently.

However, it is necessary that every practitioner make use of laboratory examination of milk samples in order to do a professional job in the control of mastitis.

Early diagnosis of latent infection is fundamentally important. If only the few clinical cases that are plainly visible are treated, and the many latent infections left untreated, no progress whatsoever is made in the control of the disease. Some of the latent infections are more prolific spreaders of infection than the clinical cases, and the herd owner knows nothing of these unless they are diagnosed for him. Also, it is impossible to know when it is safe to stop treatment of a clinical case unless samples are examined in the laboratory.

Information now available makes this diagnosis comparatively easy. It will, however, take some organization of personnel, and an investment in equipment, to make the best use of present information. Here is a problem worthy of the best efforts of local, state, and national veterinary associations.

The problem of mastitis control has been recognized by officials of several states and they have attempted to organize state programs. At the present writing, none of these attempts has proved entirely successful. The failures appear to be due to placing too much importance upon the value of organization and laboratory work and too little upon the practitioners' responsibility. Since there is no specific test for mastitis, the individual veterinarian must take the bulk of the responsibility for the success of any mastitis program, and its success will depend upon the ability of the individual veterinarian to hold the confidence of herd owners.

No doubt, many more attempts will be made by various branches of state and federal governments to organize for mastitis control. In the meantime, any large animal practitioner, who is not already making full use of laboratory diagnosis, has an excellent opportunity to improve his own and his client's position. Small animal practitioners who are already doing some laboratory work should be able to participate in this program by making laboratory examinations of milk samples.

Following is a brief outline of our method of procedure and the equipment used.

EQUIPMENT

Autoclave.
Small incubator with thermostat.
Microscope with oil immersion lens.
Wire racks to hold test tubes.
A supply of 16 cm. by 100 cm. straight culture tubes with rubber stoppers to fit.

PROCEDURE

Individual quarter samples are used because we find that they give sufficient additional information to justify the extra work as compared with composite samples.

Some milk is discarded before taking the samples.
Sample vials are filled less than half full.
Sample vials are incubated in an inverted position.
Incubation is continued for fourteen to eighteen hours.
No preservative or indicator is used.
Samples are drawn and placed in the rack in the following order.

	Cow 1	2	3	4	5	6	7	8	9	10
R.R.	1	5	9	13	17	21	25	29	33	37
R.F.	2	6	10	14	18	22	26	30	34	38
L.R.	3	7	11	15	19	23	27	31	35	39
L.F.	4	8	12	16	20	24	28	32	36	40

Samples are incubated in an inverted position so that there will be a concentration of bacteria and leucocytes on the stopper. The film is made by applying the stopper directly to the glass slide. With this method, it is impossible to get an exact leucocyte count per cubic centimeter. However, the number of leucocytes per field will bear a certain relation to the leucocyte

count. The number and type of leucocytes per field is one of the important guides in making the diagnosis. For example, in samples that are clearly negative, many fields will have no leucocytes, whereas cases in the acute or subacute stage will have so many leucocytes per field that it will be impossible to count them. Latent and chronic cases will fall between these extremes. In latent and chronic infections, there will be from 25 to 100 leucocytes per field with streptococci, staphylococci, or other pathogenic organisms present.

With a little experience, it is not difficult to pick out the negative and positive cases. However, there will be a considerable number of cases that show some evidence of infection, such as increased leucocytes, but yet will not be clearly positive. The proper disposition of these suspicious cases requires good judgment. We advise that they either be retested at once or treated as positive cases, whichever is easiest.

The check-up after treatment is of great importance. Physical symptoms are by no means a safe guide as to when it is safe to stop treatment. All such symptoms may disappear from the udder and milk and yet leave a chronic infection that will cause trouble at a later date. This fact is one of the reasons many people question the value of treatment for mastitis. They believe that the treatment is of little value because many cases recur. In these cases, the fault is not with the medication but with a failure to continue the treatment until all foci of infection are wiped out, or, if this is impossible, failure to remove the incurable cases from the milking line.

A laboratory examination is the only safe guide in deciding when it is safe to stop treatment.

DISCUSSION

With our present drugs, it is possible to eliminate almost any udder infection if the proper treatment can be started before too much permanent damage is done. However, some acute cases reach a highly destructive stage quickly and it is possible to get these cases early enough to effectively treat them only when the attendant is mastitis-conscious and a keen observer.

Streptococcic infections, which are credited with causing about 90 per cent of the losses by mastitis, are very susceptible to the action of penicillin. However, if treatment is to be entirely successful it must be started before too much damage is done. Streptococcic infections are usually chronic but they may be subacute or acute and may become generalized. Generalized streptococci infections are susceptible to penicillin and the sulfonamides but require systemic as well as local treatment. The information and drugs are now available to eradicate *Streptococcus agalactiae* infections from the udders of cows in herds that are well managed by coöperative owners.

Staphylococcic infections, which are probably next in importance in causing mastitis losses, are not so easily handled. However, the sanitary and early diagnostic procedures, which are necessary for the eradication of streptococcic infections, will also operate to reduce losses caused by staphylococci. Taking staphylococcic infections as they come, the best treatment so far reported results in about 50 per cent of the cases being cured. Penicillin is the drug of choice. Some staphylococci require higher concentrations of penicillin than are necessary for streptococci. It is also necessary to continue treatment longer—four to eight days or longer. Some staphylococcic infections quickly progress to gangrene of the udder and when this occurs the udder is lost—and perhaps the cow. Until a way is found to make the diagnosis in the very early stages, these cases will continue to be embarrassing.

Escherichia coli, and the colon group of organisms, frequently cause acute mastitis and may sometimes be involved in chronic mastitis. Some of these infections become generalized and the animal loses flesh rapidly if proper treatment is not given. In the quarter, a combination of streptomycin and penicillin is generally effective; while for the systemic infection, good results have been achieved with 1 : 1,000 acriflavine solution. For a large cow, give 500 cc. intravenously every twenty-four hours until the temperature is normal for twenty-four hours.

Corynebacterium pyogenes often causes a very serious mastitis that may quickly advance to the sloughing stage and may terminate fatally. Although penicillin is effective against *C. pyogenes*, treatment is seldom successful because there is usually so much swelling in the udder that medication cannot penetrate. Here, again, is an infection that cannot be successfully handled unless effective treatment is started in the very early stages. To do this requires excellent coöperation from a very observant attendant.

To summarize, the control of mastitis requires the services of a veterinarian who has given the subject more than passing study. Any mastitis-control program requires good team work between the herd owner and his veterinarian. With this combination, it is possible to reduce mastitis losses to a point where they are not an

important item. The cost of such a program should be considered as insurance against a much heavier expense.

Teaching and Research Facilities for the Study of Large Animal Physiology and Pharmacology

The importance of the study of veterinary physiology and pharmacology in the training of veterinary students is recognized. The inclusion of physics and mathematics in pre-professional training gives the student a much better background for the understanding of physiologic and pharmacologic processes. In order to make the best use of the additional time available and the improved educational background of the veterinary student, the instructor finds it advantageous to rearrange his course work.

One direction for the expansion of course work in veterinary physiology and pharmacology is to use large animals more extensively for instructional purposes. The interest of the student is kept at a high level when he is working with animals with which he will be concerned when he finishes his training. In addition, there are certain functions unique to the large domestic animals that cannot be effectively taught except by studying the animal itself. In order to use large animals for instructional purposes in physiology or pharmacology, proper facilities for handling the animals are essential.

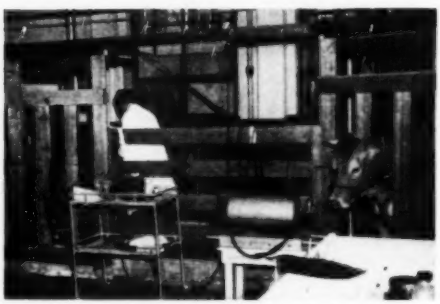


Fig. 1—A section of the large animal physiology and pharmacology laboratory showing the stanchion-gate construction.

The construction of a large animal physiology and pharmacology laboratory was recently completed at the State College of Washington, College of Veterinary Medicine. This laboratory has an outside entrance leading into a large box stall. Two additional box stalls are adjacent to the one entered from the outside. Each stall has two sliding gates constructed to facilitate their use as stanchions. This feature makes it possible to present either the right or left side of the animal to the laboratory. The animal can also be stanchioned with its head extending into the laboratory if blood samples are to be collected, or experiments involving the head and neck regions are in progress. Laboratory facilities for the analysis of specimens are available in the laboratory. The kymograph and other recording equipment are kept on movable tables and put into position next to the stalls, as needed. This permits the use of delicate equipment close to the animal without the danger of having the animal upset the equipment.

These facilities can also be used for research investigations. Apparatus for chemical analytic procedures adjacent to the animals saves a great deal of time, and allows observation of recording apparatus at more frequent intervals. Animals are not housed in the laboratory, except during instructional or research activities.

It is felt that such facilities will improve instruction in physiology and pharmacology, better illustrate the clinical relationships of these sciences, enable the student to obtain a better understanding of comparative physiologic processes, and stimulate research in the field of large animal physiology.—*E. C. Stone, B.S., M.S., D.V.M., State College of Washington, College of Veterinary Medicine, Pullman, Wash.*

From the Department of Veterinary Physiology and Pharmacology, College of Veterinary Medicine, State College of Washington, Pullman, Wash.

There is ample evidence that rabies can be controlled, in the absence of any considerable wild animal reservoir, by control of dogs. Various plans for control are under consideration—none will be effective unless accepted by the public. This aspect is complicated by the presence of a large and highly vocal group of dog fanciers who tend to resist all efforts to implicate the dog in any way. While such persons may reject programs based on protection of human beings, they can scarcely fail to accept one designed primarily for the protection of dogs.—*Am. J. Pub. Health*, 39, *July*, 1949: 877.

The persistence of *Hemophilus bovis* in the eyes of cows, after recovery, is likely the means by which bovine infectious keratitis is carried over from one season to the next.—*Earl M. Baldwin, Jr., D.V.M., Nebraska.*

NUTRITION

Nutritional Diseases of Poultry

ERWIN L. JUNGHERR, D.M.V.

Storrs, Connecticut

WITHIN THE framework of this review of progress in poultry pathology, the discussion of nutritional diseases is designed to point out those deficiency diseases which occur, and are subject to precise diagnostic recognition, in the field, rather than those produced experimentally on simplified diets. It is well known that there occur, sometimes, in both young and old poultry flocks, vague, apparently noninfectious diseases which defy diagnosis and which are often suspected to be of nutritional origin. Furthermore, the flock owner, who depends largely on commercially mixed feeds, is readily inclined to put the blame for poultry losses, irrespective of cause, upon the feed. Such an attitude should be vigorously counteracted by professional advice and judgment. In times of normal supply, commercial ready-mixed feeds, although by no means of equal nutritive quality, are usually built along established principles of avian nutrition and contain the known protective factors in sufficient amounts, so that definite deficiency diseases form the exception rather than the norm. Under practical conditions, deficiency diseases occur occasionally as a result of faulty mixing of a given batch of feed, inadequate premixing of small-quantity ingredients, and undue aging. In analyzing possible deficiency conditions, it is important to compare the manufacturers' directions for, with the actual usage of, the feed, and also to obtain complete anamnestic data as to changes in feed and length of exclusive scratch grain feeding in baby chicks.

The diagnosis of nutritional diseases should begin with an attempt to rule out infectious and managerial factors by every conceivable means. The demonstration of pathologic changes which are specific for certain nutritional diseases forms, of course, the primary basis of diagnosis. This may be supported at times by small-scale, specific therapeutic tests. On the whole, a professional opinion should not be expressed as to quality of feed unless supported by incontrovertible evidence.

The following account of nutritional diseases in poultry is based primarily upon the writer's diagnostic and experimental experience and may be considered representative of the situation in an intensive poultry-producing area which depends largely upon ready-mixed feeds. For a systematic discussion with bibliography, the reader is referred to the treatises by Norris and Scott[12] and Sherwood and Couch.[19]

VITAMIN A DEFICIENCY

The essentialness of vitamin A for poultry was established by Beach.[1] While the early work was concerned primarily with the syndrome produced by total A-avitaminosis, recent work seems to emphasize the concept of partial deficiency, and the positive correlation between vitamin A intake and intensity of pathologic expression. Estimates of the vitamin A requirement vary widely with the criteria used for establishing the corresponding deficiency. Furthermore, minimum intake which prevents the occurrence of either gross or microscopic specific lesions is considerably under the amount which permits optimum growth and performance. Although carotenoid pigments of plants form the natural source of provitamin A, while fish liver oils furnish vitamin A, there is evidence as to species differences in the power to convert and store the respective forms. Furthermore, the presence of natural antioxidants, such as vitamin E, seems to influence vitamin A as to preservation in, and assimilation from, the feed. Such considerations may shed light upon the occasional occurrence of vitamin A deficiency under practical conditions

The symptomatology of vitamin A deficiency is characterized by cessation of growth, incoördination, depigmentation,

From the Department of Animal Diseases, Storrs Agricultural Experiment Station, University of Connecticut, Storrs.

Presented before the Section on Poultry, Eighty-sixth Annual Meeting, American Veterinary Medical Association, Detroit, Mich., July 11-14, 1949.

lacrimation, and decrease in egg production. Any one of these external signs may be brought about by other etiologic factors and, therefore, can not be considered specific. Except for effect on egg production, the symptoms are much more pronounced in the growing young than in the adult bird. Incoördination, originally attributed to lesions of the central nervous system, is now believed to be due to pressure phenomena, brought about by a lag in osseous development during the period of normal brain growth, according to Wolbach and Bessey.[21]

The early pathologic concept of vitamin A deficiency emphasized marked caseous swellings of the infraorbital sinuses, which gave rise to the expression "nutritional roup," and enlargement of the kidneys, due to accumulation of urates. While such alterations are rarely seen today, it is recognized that the marked infra-orbital swellings, even if they did develop on the basis of avitaminosis A, are in reality due to secondary bacterial invaders, and that the common form of visceral gout, of unknown etiology, is rarely due to vitamin A deficiency.

Gross lesions which are suggestive of vitamin A deficiency consist of whitish caseous plugs, especially subconjunctivally in the inner canthus of the eye, the nasal vestibule, and the bursa of Fabricius. In the early stages, the esophagus presents evenly spaced, whitish nodules which are essentially tiny plugs in the glandular orifices, lesions which may coalesce and extend to the oral mucosa, and, thereby, become suggestive of exudative diseases, such as wet fowlpox, and other respiratory infections. As stated, the kidneys sometimes show whitish injections of the ureters, but, rarely, the marked hypertrophy commonly associated with visceral gout or infiltrative neoplasia.

The pathognomonic microscopic lesions consist of metaplastic transformation of secretory glandular to squamous epithelium, accompanied by various degrees of hyperkeratinization. Even in the same bird, different organs respond in different degrees —as a rule, the mucous portion of mucocutaneous junctions, especially of the nasal septum, represents the most sensitive area, next to the excretory ducts of the salivary glands.[5] Other manifestations such as heterophil infiltration and mucoid degeneration of glands are nonspecific in nature and result from secondary bacterial invasion and pressure by exudate.

The diagnosis of vitamin A deficiency is based upon finding the suggestive gross, and the specific microscopic, lesions. It may be aided by submitting fresh liver tissue, in a frozen state, to a properly equipped laboratory for determination of stored carotene and vitamin A units per gram of liver tissue. Differential diagnosis should rule out diphtheritic fowlpox, by demonstrating, grossly, cutaneous pox lesions and, microscopically, cytoplasmic inclusion (Bollinger) bodies. Differential diagnosis should also rule out laryngotracheitis by demonstrating hemorrhagic-diphtheric tracheitis and intranuclear inclusion bodies; and eliminate candidasis by culture for *Candida (Monilia) albicans;* and unrelated leg weakness by demonstrating other causes.

VITAMIN D DEFICIENCY

Since the work of Hart *et al.*[6] demonstrated the need of confinement-reared birds for vitamin D, at least 10 different sterols activated by light have been shown to possess antirachitic properties. Among the vegetable-derived substances, ergosterol, known as calciferol or D_2, is considered less effective than 7-dehydro-cholesterol or D_3, found principally in fish liver oil. Furthermore, it has been shown that the vitamin D requirements are increased by marked deviation from the optimum, relative, and absolute calcium-phosphorus ratio in the feed. For effectiveness, a certain proportion of the phosphorus must be available in the inorganic form, although D_3 seems to increase the availability of organic phosphorus from vegetable-derived phytin. Various species of birds may differ in unit requirements of vitamin D per pound of feed, e.g., turkeys need 2 to 4 times as much as chickens. Pathologically, avian rickets comprises two forms, namely, rare aphosphorotic rachitis[10] and common acalcicotic osteoporosis.[13]

Symptoms of vitamin D deficiency are primarily recognizable in young birds which have not completed skeletal development. Fast-growing birds of the heavy breeds are more susceptible than slow-growing, light birds. Exceptionally, the condition is found in 1-week-old birds and is then suspected to be due to a parent-stock-transmitted deficiency, while the ordinary incidence is from the fourth week of brooding, onward. The first sign may be a halting, stilted gait followed by enlargement of the joints and skeletal distortions. The shanks tend to become anteriorly concave. The locomotive disturbance, if severe, may be accompanied by systemic changes of unthriftiness, due to the impaired food intake and metabolism.

Postmortem examination should be both visual and tactile. On gross examination of rickets, the beak can be readily pushed

back toward the base of the skull; intentional breaking of the tibial bones gives the characteristic feeling of a green-stick fracture. The thorax is often dorsoventrally flattened, the sternum bent and soft, and the costochondral junction of the ribs enlarged or caved in. The internal organs appear normal, except that the acetabulums bulge into the abdominal cavity and can be cut with a knife. A search should be made for the parathyroid glands which are located near the caudal pole of the thyroid glands. Under normal conditions, the parathyroid glands are barely visible, while in hyperplasia, they form prominent white nodules up to the size of a large pinhead. The main changes are seen in the posterior extremities which show enlarged joints, particularly of the tibiometatarsal articulation, and various degrees of deformities of the metatarsi. For further tests, the proximal epiphysis of the tibia is split parallel to the axis of the condyles. Thereby, the normally sharp line of provisional calcification will be seen to be wide, with ill-defined borders.

Microscopically, aphosphorotic rachitis, which is usually not accompanied by parathyroid hyperplasia, is characterized by broad, poorly calcified bone trabeculae (so-called osteoid) which fail to follow the architectural lines of stress. Broad cartilaginous tongues extend into the diaphysis. The more common form of acalcicotic osteoporosis, which is characteristically accompanied by parathyroid hyperplasia, shows, at first, normal bone trabeculae hollowed out by an excessive number of osteoclasts. Gradually, the affected trabeculae are replaced by fibrous bone marrow. Occasionally, some cases show pathologic features of both major patterns.

The diagnosis of avian rickets can be made, as a rule, by gross pathologic examination, but the differentiation as to type may require supplementary microscopic study. Laboratory determination of bone ash is helpful.

Therapeutically, early cases of rickets may be influenced favorably by individual dosing with fish oils high in vitamin D; in corrective management, extra supplies of calcium or inorganic phosphorus, aside from vitamin D, should be based upon the respective pathologic form involved.

VITAMIN E DEFICIENCY

Experimental feeding to chicks of a ration high in fat and deficient in vitamin E induces nutritional encephalomalacia.[14] When fed to ducklings, such a ration induces widespread degeneration of the skeletal musculature,[15] and when fed to poults, it causes degeneration of the ventricular musculature.[9] Although all three pathologic entities resembling the experimental conditions have been observed in the field,[16] only field encephalomalacia or "crazy chick" disease is common.[7] Reports from the U.S. Poultry Inspection Service[2] would suggest that necrosis of the gizzard musculature occasionally occurs, also, in chickens. Experimental feeding to chicks of a ration low in fat and deficient in vitamin E, induces generalized edema known as exudative diathesis.[4] This syndrome, likewise, has its counterpart in the field, where it has been attributed to either chronic coal tar or sodium chloride poisoning. The main reasons for citing these field conditions under vitamin E deficiency are that they are reproduceable experimentally on rations low in vitamin E, and that they are preventable by the same vitamin E carriers effective in the experimental conditions. After several weeks on a ration low in vitamin E, the pathologic processes may develop quite suddenly in a percentage of the birds and are then not subject to treatment with vitamin E. Thus, many of the interacting factors in vitamin E deficiency are not understood.

Symptoms of field encephalomalacia appear, usually, in well-developed birds at the age of 3 to 4 weeks, rarely of 1 week. They begin with incoördination, stumbling, and paresis, and progress to retraction of head, retropulsion, falling to one side, and somersaulting. The average mortality is between 1 and 5 per cent, exceptionally much higher. Recovered birds may show a "wry neck." By contrast, exudative diathesis shows no locomotor disturbance, the chicks look unusually well nourished, but on palpation, feel waterlogged. There is terminal gasping accompanied by moist tracheal rales. The diseases in ducklings and turkeys are characterized by general weakness.

Postmortem examination of "crazy" chicks fails to reveal visceral lesions although complicating cecal coccidiosis is common. The brain, exposed by a sagittal cut, exhibits, in about 80 per cent of clinical cases, edematous swelling of the cerebellum with reddish, rarely yellowish green, areas in the white matter. The cerebellar convolutions are typically broadened and flattened. The exudative form shows various degrees of anasarca, ascites, and hydropericardium. Ducks and poults present pale brown to greyish alterations in the skeletal and ventricular musculature, respectively.

Microscopically, the specific lesions of encephalomalacia may involve several cerebellar folia, the medulla, or the cerebrum. They are most striking in the first location and are represented by pyknosis, intercellu-

lar edema, capillary hemorrhages, and hyaline thrombosis.[22] In place of such acute alterations, the cerebellar molecular layer may show extensive replacement fibrosis of a peculiar radial arrangement. While histologic findings in the exudative form are largely nonspecific, affected duck and poult musculature show primary necrosis and secondary cellular infiltration, regeneration, and/or fibrosis. The voluntary muscle is prone to dystrophic calcification.

The occurrence of vitamin E deficiency on natural feeds is a puzzle. The incidence is highest during the early part of the warm season. High fat, corn, cod liver oil, and fermenting substances[5] are believed to contribute to the destruction of natural vitamin E. Differential diagnosis should rule out other forms of leg weakness, in particular, avian encephalomyelitis (epizoötic tremor) which is characterized by microscopic lymphoid infiltrates in pancreas, proventricular wall, and brain. Newcastle disease (avian pneumoencephalitis) usually shows associated lesions in the respiratory tract. Sporadic cases of recovered crazy chicks are frequently seen in routine neuropathologic examinations, even in older birds.

RIBOFLAVIN DEFICIENCY

Curled toe paralysis or ariboflavinosis was first produced experimentally by Norris *et al.*,[11] and is occasionally observed in the field. The disorder occurs in chicks of excellent conformation and condition during the third to fourth week of brooding and sometimes singles out the males on account of their greater growth potential.

The symptoms, bilateral weakness in the hocks leading to a squatting position with the toes characteristically turned inward, come on suddenly.

The gross and microscopic pathology[17] is confined to the femoral portion of the sciatic nerves. Uplifting the triangular adductors on the medial aspect of the thigh shows the normally white double strands to be thickened, gelatinous, and yellowish. Microscopic verification is accomplished by frozen sections either unstained for polarized light examination or fat stained; either of these tests would show extensive myelin degeneration or neuromalacia.

The diagnosis may be supported by individual dosing with about 10,000 μg. of riboflavin which should bring about dramatic recovery within twelve to twenty-four hours.

PEROSIS

Hock disease, slipped tendon, or perosis was frequently observed in growing domesticated birds during the early stages of intensive poultry culture. Advance in the etiologic understanding of the disease came from the work of Wilgus and associates,[20] who demonstrated the preventive action of low levels of manganese in the diet. Feeding of excess minerals, especially of magnesium,[3] seems to contribute to the incidence[12] by forming insoluble compounds with manganese. On the other hand, a series of vitamin B complex factors now is believed to be implicated in the prevention of the condition, especially biotin, choline, folic acid, riboflavin, and niacin, the latter especially in poults.

The symptomatology and pathology is discernible on clinical examination. Viewed posteriorly, the affected birds show the normally straight axis of the tibiometatarsal joint to form an obtuse angle, deviating either medially or laterally. This deformity may be accompanied by flattening of metatarsus, thickening of hock joint, and secondary traumatic infection. In distinction from rickets, the breaking strength of the bones is unimpaired or even enhanced.

The disorder is believed to be due to a hypoplasia of the columnar cartilage in the distal tibia. This leads to unequal development of the sagittal articular ridges, thereby permitting the gastrocnemius to slip from its grove between the ridges and to exert an abnormal pull. Once developed, the condition is not amenable to treatment.

FIELD DERMATOSIS

A simplified diet, deficient in pantothenic acid, produces dermatosis of the face in chicks; if deficient in biotin, dermatosis of the legs. A corresponding syndrome is occasionally observed in the field, but conclusive proof is lacking as to its nutritional or infectious origin. Field dermatosis shows a gradual onset, reaches a peak about the third week of brooding, and is accompanied by considerable mortality. Survivors after the fifth week, as a rule, develop normally. The principal signs are rough feathers, crusts in the corners of the mouth and on the eye lids, and particularly poor development and undernourishment, which latter factors have led to the designation stunted chick disease.[18]

Pathologic, bacteriologic, and histologic examinations are noncontributory. Recommendations are necessarily of a general nature and include culling, good nursing, and improving the level of nutrition.

GIZZARD EROSIONS

Chicks showing the systemic expression of field dermatosis sometimes present various degrees of erosion, ulceration, or par-

tial maceration of the corneous lining of the gizzard. The disorder was more common during the prewar than the subsequent period. Its exact relation to nutrition is not known. Experimentally, it has been shown that early lesions, apparently initiated by capillary hemorrhages in the true ventricular mucosa, already occur during the late embryonic life; and that such lesions fail to heal in the growing chick on diets deficient in the antigizzard erosion factor.[19] This unidentified substance seems to be present particularly in fresh fluid milk and fresh vegetables. Bile apparently exerts a protective action on the gizzard lining, which would suggest the use of cholagogues in therapeutic approach.

SUMMARY

The more important nutritional diseases of domesticated birds are discussed as seen in an intensive poultry-producing area primarily dependent upon commercial ready-mixed feeds. The symptomatology and gross and microscopic pathology are stressed from the standpoint of diagnosis. It is pointed out that in the present days of scientifically built, ready-mixed feeds, nutritional diseases of birds are uncommon and that veterinary medical opinions on feed quality should be based on incontrovertible evidence.

References

[1]Beach, J. R.: Studies on a Nutritional Disease of Poultry Caused by Vitamin A Deficiency. California Agric. Exper. Sta. Bull., 378, 1924.

[2]Brandly, P. J.: U.S.D.A. Prod. and Mark. Adm. (Personal communication, 6-22-1948).

[3]Bruckner, G. D., Martin, J. H., and Insko, W. M., Jr.: The Effect of Magnesium Carbonate When Added to Diets of Growing Chicks. Poult. Sci., *11*, (1932): 58-62.

[4]Dam, H., and Glavind, J.: Alimentary Exudative Diathesis and its Relation to Vitamin E. Skand. Arch. Physiol., *82*, (1939): 299.

[5]Gericke, A. M.: Fermented Grain Products as a Source of Riboflavin. World's Poult. Sci. J., *5*, (1949): 20-23.

[6]Hart, E. B., Halpin, J. G., and Steenbock, H.: The Nutritive Requirements of Baby Chicks. II. Further Study of Leg Weakness in Chickens. J. Biol. Chem., *52*, (1922): 379-386.

[7]Jungherr, E.: A Field Condition Resembling Nutritional Encephalomalacia in Chicks. Science, *84*, (1936): 559-560.

[8]Jungherr, E.: Nasal Histopathology and Liver Storage in Subtotal Vitamin A Deficiency of Chickens. Storrs (Conn.) Agric. Exper. Sta. Bull., 250, 1943.

[9]Jungherr, E., and Pappenheimer, A. M.: Nutritional Myopathy of the Gizzard in Turkeys. Proc. Soc. Exptl. Biol. and Med., *37*, (1937): 520-526.

[10]McGowan, J. P., and Emslie, A.R.S.: Rickets in Chickens with Special Reference to its Nature and Pathogenesis. Biochem. J., *28*, (1934): 1503-1512.

[11]Norris, L. C., Heuser, G. F., and Wilgus, H. S.: Is the Chief Value of Milk for Feeding Poultry Due to the Presence of a New Vitamin? Poult. Sci., *9*, (1930): 133-140.

[12]Norris, L. C., and Scott, M. L.: Proteins, Carbohydrates, Fats, Fiber, Minerals and Water in Poultry Feeding. In "Diseases of Poultry" by H. E. Biester and L. H. Schwarte., Iowa State College Press, Ames, Iowa, (1948): 115-156.

[13]Pappenheimer, A. M., and Dunn, L. C.: The Relation of Leg Weakness in Growing Chicks to Mammalian Rickets. J. Biol. Chem., *66*, (1925): *59*, (1934): 35-42.

[14]Pappenheimer, A. M., and Goettsch, Marianne: A Cerebellar Disorder in Chicks, Apparently of Nutritional Origin. J. Exptl. Med., *53*, (1931): 11-26.

[15]Pappenheimer, A. M., and Goettsch, Marianne; Nutritional Myopathy in Ducklings. J. Exptl. Med., *59*, (1934): 35-42.

[16]Pappenheimer, A. M., Goettsch, Marianne, and Jungherr, E.: Nutritional Encephalomalacia in Chicks and Certain Related Disorders of Domestic Birds. Storrs (Conn.) Agric. Exper. Sta. Bull., 229, 1939.

[17]Phillips, P. H. and Engel, R. W.: The Histopathology of Neuromalacia and "Curled Toe" Paralysis in the Chick Fed Low Riboflavin Diets. J. Nutr., *16*, (1938): 451-463.

[18]Robertson, E. I., Angstrom, C. I., and Clark, H. C.: Field Research on "Stunted Chick" Disease. Poult. Sci., *28*, (1949): 14-18.

[19]Sherwood, R. M., and Couch, J. R.: Vitamins and Vitamin Deficiencies. In "Diseases of Poultry" by H. E. Biester and L. H. Schwarte. Iowa State College Press, Ames, Iowa, (1948): 157-202.

[20]Wilgus, H. S., Jr., Heuser, G. F., and Norris, L. C.: The Role of Certain Inorganic Elements in the Cause and Prevention of Perosis. Science, *84*, (1936): 252-253.

[21]Wolbach, S. B., and Bessey, O. A.: Vitamin A Deficiency and the Nervous System. Arch. Path., *32*, (1941): 689-722.

[22]Wolf, A., and Pappenheimer, A. M.: The Histopathology of Nutritional Encephalomalacia of Chicks. J. Exptl. Med., *54*, (1931): 399-405.

Cobalt for Dairy Cattle.—An experiment to determine the amount of cobalt that growing dairy cattle can consume with safety revealed (*J. Dai. Sci.*, 32, June, 1949: 527-533) that apparently 50 mg. of cobalt per 100 lb. of body weight can be consumed daily from cobaltous sulfate for many weeks without definite harmful effects. There was considerable individual variation, and a small excess of cobalt sulfate consumed orally increased hemoglobin and packed red cell volume. The consumption of a greater excess also decreased the appetite and water consumption, and produced rough hair and muscular incoördination. The levels of cobalt generally added to concentrates by feed manufacturers and recommendations for inclusion in mineral mixtures appear to afford a wide margin of safety.

Calcium deficiency is shown more clearly and more promptly in the short bones of the body.

EDITORIAL

Trespassing and Poaching on Veterinary Practice

Trespassing means illegal entry, *poaching* denotes plunder by stealth. Since the regulations governing the qualification for the practice of medicine are both expressed and implied, each of these hard words is applicable to the harmful encroachments on the practice of veterinary medicine that occur every day.

Ever since a few dozen college graduates staked their claim in practice, nearly a hundred years ago, protests have been heard about the poaching on the practitioner's rightful domain. The remedy most often recommended to the practitioners has been the more or less hackneyed saw "use your fine education and put 'em out of business." The foregoing quotation usually came from public officials who were "sitting pretty," but had never had the opportunity to study the professional problems of practice first hand.

The practitioners themselves must assume some of the blame. They were too slow to join their associations and make themselves heard. They never took time to analyze their professional travail and plan workable methods of keeping out poachers. Too often the spokesmen for the profession were not representing the practitioner's viewpoint. Because this "put 'em out of business" philosophy got an early start, never lost momentum, and appears to be failing in principle and practice, it is one of the costly mistakes that certainly deserves careful scrutiny by veterinarians.

By way of contrast, the medical profession, during the same period, never yielded ground for a minute to any person or agency caught poaching on the practice of medicine. Even though the danger of legal retribution was implied, the poachers were openly called quacks, fakirs, schemers, shysters, in the public interest, to the degree of their alleged peccability. Impolite? Unprofessional? Dangerous? The end justified the means. It squelched a public hazard, gave dignity to the practice of medicine, and held in abeyance a nuisance to practicing physicians.

In the case of veterinary medicine—a food-conserving as well as a public health service—the physician's attitude of come-on-out-and-let's-see-what-you've-got might also be more useful than depending entirely on superior ability and training to stop poaching. The physicians started by building a fence around their field and have not made any apology for getting tough with the trespassers. On the contrary, the medical profession has been a leader in distinguishing right from wrong in plain language that the public can comprehend.

For one example out of many, what would physicians be doing at this hour were the drug trade straining every sinew to lure the sick to the drug store and to by-pass the doctor's office? The drug stores are doing exactly that to the veterinarians, even to the extent of advising retail druggists in rural areas to build up their prestige among farmers by buying a farm and raising livestock. That, says one publication, made a druggist's "vet volume jump 50%." The technical material distributed on the diagnosis and treatment of the most hazardous animal diseases, the advice proffered to retail druggists through drug publications on how to bring the unsuspecting laymen in to see the elaborate displays of livestock remedies, and the schools conducted to instruct the druggists (2- to 4-day courses) how to cope with animal diseases give an insight to the form of poaching that would quickly arouse the ire of the medical profession.

The question that confronts our profession is one of collective conduct—whether to go on being soft for fear of offending someone or getting *as tough as the physician*. They seem to have found the way to keep the trespassers out without losing caste among the people. The problem involves all phases of organized veterinary medical activities—from the public relations programs to the policy-making units.

The consideration of the existing laws that regulate the practice of veterinary medicine in our states might well be a starting point. Practice acts are not designed to protect the veterinarian; they are a protection for the animal-owning public and should be considered in that light by legislators and farm and livestock organizations. It would seem to be the logical beginning for an active campaign against the poachers and trespassers.

A Neglected Opportunity

In recent years, the value of the individual farm animal has been high. An ailment which could disturb the health, the normal growth, the development, or threaten the life of an animal has been cause for the livestock owner to call for veterinary service. The value of the animal as an individual has been the compelling factor, and the veterinarian has been kept more than busy. This condition has overshadowed, and caused us to disregard, some other activities which rightfully belong in the field of veterinary service.

During these same years, we have seen many advancements in the field of veterinary medicine, and animal, dairy, and poultry science. All of these have been developed with the view of making animals productive, healthy, and profitable. Some of these advancements are the direct result of the efforts of veterinarians, and their application is rightfully under the supervision of veterinarians. One of these developments which has been neglected by most veterinarians is the field of artificial insemination (AI), reported in this issue of the JOURNAL under the title, "The Present Status of Artificial Insemination in Dairy Cattle." The tables show the large number of animals enrolled in the programs in the various states. At the close of 1948, all states except one had AI organizations of some kind functioning.

Artificial insemination has grown into a tremendous business in ten years and is considered one of the greatest contributions offered to the dairy cattle-breeding program. In the early days, veterinarians ignored this work, and during the war years they did not have time to take hold of it. The program is sound and has developed with only a few veterinarians participating. The paper given at the San Francisco meeting by Dr. Rans, (*see* JOURNAL, *114*, (April, 1949): 206-210) cites some of the active veterinarians and the contributions made by them. There are a few others, but the cold fact remains that few veterinarians are actively identified with this program. The tables in the AI article in this issue show limited participation in a few states.

One of the most interesting observations garnered from the current survey refers to research problems associated with the artificial insemination programs. It shows that 33 of 49 replies indicate that the most pressing problem is "infertility, sterility, or the repeater cow." This is certainly a veterinary problem; yet only eight veterinarians are employed on the technical staffs of the organizations and only nine reports indicate that veterinary medicine is the type of training most needed by research workers in this program.

A glance at table 1 shows that there are a few veterinarians doing the work of insemination and, in a very small number of states, that most of the work is done by them. In many cases, where they are actively carrying the program, they also look after the health of the herd from the standpoint of supervising and treating breeding problems, but in the main they are not prominent in the picture. Many in the profession are disturbed about the number of veterinarians being graduated and yet they complain about laymen or technicians doing our work. The AI program was literally laid in our laps a few years ago and we refused to take an interest in it. All due credit should be given to the few veterinarians who were, and are, sufficiently interested to participate in the practice or research phases of this important livestock enterprise. Had it not been for this small group, there is every reason to believe that now we would be completely on the outside looking in. All veterinarians should be conscious of, and familiar with, this program and the part that we can play in its improvement and further development. So far, it has grown despite us. Are we interested in helping a program that needs, wants, and will accept our help?

S/JOHN B. HERRICK, D.V.M.

New Facts on Meat-Food Poisonings

The long-entertained belief that food soiled with organisms of the genus Salmonella was the sole cause of meat poisonings at banquets, picnics, church socials, sandwich stands, etc., needs revision, according to recent study. In the light of modern investigations carried beyond the guesswork conclusion, protein fragmentation in the presence of endogenous (intestinal) bacteria is the responsible agency. Certain amino acids facilitate the absorption of toxic substances, including histamine, normally blocked by the intestinal mucous membrane or destroyed by the liver. In other words, investigators must search beyond the mere contamination of food with bacteria by handlers. Salmonellosis, however, cannot always be discarded.—*From Revue de Pathologie Comparee, Jan.*, 1949.

[And the toxin-forming staphylococci continue to cause problems of this nature also.—ED.]

CURRENT LITERATURE

ABSTRACTS

Salmonellosis in Mink

Mink and ferrets can be easily infected and killed by intraperitoneal injections of Salmonella cultures, but this is not the natural method of exposure. Infection by oral administration was difficult or impossible, except in some animals having a lowered resistance because they had received half-rations for an extended period. Previous infection with distemper, or previous anthelmintic treatment, seemed to cause no added susceptibility to salmonellosis.—[*J. R. Gorham, D. R. Cordy, and E. R. Quortrup: Salmonella Infections in Mink and Ferrets. Am. J. Vet. Res.*, 10, (*April*, 1949) : 183-192.]

Newcastle Disease Vaccination

Vaccination with a commercially prepared, killed virus vaccine did not entirely prevent Newcastle disease (avian pneumoencephalitis), but did enable the birds to withstand a severe infection with relatively little loss. Some 37,000 birds were vaccinated, and 20,000 were left as controls. The vaccinated birds yielded a profit to the owner, while the unvaccinated controls did not; hence, it is concluded that use of this type of vaccine is a practical procedure.—[*H. W. Schoening, O. L. Osteen, D. H. Legenhausen, W. A. Anderson, and W. J. Hall: Vaccination Against Newcastle Disease with Formalin-Inactivated, Commercially Produced Vaccines. Am. J. Vet. Res.*, 10, (*April*, 1949) : 176-182.]

Meat from Brucella-Infected Animals

One of the Russian brucellosis-control measures for 1949 is the slaughter of affected sheep, goats, and swine. Less valuable stock is to be slaughtered first. Purebred sheep and swine may be slaughtered only with the permission of the agricultural ministries concerned in each case. Local veterinary personnel is responsible for the enforcement of the following regulations:

Animals showing clinical signs of the disease shall be slaughtered at the farm, or in the nearest abattoir on a day when no other animals are slaughtered.

Goats may not be sent to abattoirs for slaughter, regardless of clinical condition. Sheep may not be slaughtered in abattoirs for three months after lambing or abortion.

Reactors without symptoms may be shipped or driven, avoiding feeding stations, to the nearest meat combine (packinghouse) or Brucella-infected fattening point. Reactors must be isolated from healthy animals at slaughter.

All animals affected with brucellosis must be slaughtered under the direct observation of a veterinarian. Meat from animals showing clinical symptoms or lesions of brucellosis shall be cooked or salted. Salted beef or pork may be released after one month, mutton and goat after two months. Meat from reactors showing no symptoms or lesions may be released without restriction, except sheep killed less than three months after lambing, or goats from infected farms. Meat from such animals shall be cooked or salted. Parenchymatous organs and udders of all reactors, regardless of clinical condition, shall be cooked or salted. The use of blood or endocrine organs for medicinal purposes is prohibited.—[*A. G.*: On the System of Slaughter for Meat of Animals affected with Brucellosis. Veterinariya*, 26, (*June*, 1949) : 33.]—R.E.H

*Only the initials of the Russian author were given.

Penicillin in Veterinary Practice

Penicillin is not expected, by this author, to play an important part in the treatment of many veterinary conditions. Although this antibiotic agent is useful in treatment of postoperative, traumatic, and puerperal infections, the results were questionable when used in swine erysipelas; they were disappointing in treating leptospirosis; and completely negative when used for glanders. Moreover, many cases of bovine mastitis responded more favorably to older treatments than to administration of penicillin.—[*A. Senze: The Usefulness of Penicillin in Veterinary Practice. Medycyna Weterynaryjna*, 4, (1948) : 235-238.]—L. I. H.

Treating Anaplasmosis with Antimalarials

Anaplasmosis has been spreading and has now been recognized in at least 29 states. It causes an annual loss estimated between $4 and $6 million from the cattle industry alone.

Paludrine and quinoline diphosphate, two new antimalarial drugs, gave favorable results in treating Oklahoma cattle infected with anaplasmosis. Paludrine hydrochloride, injected intravenously at 24- and 48-hour intervals, gave most favorable results. When not more than 15 per cent of the red blood cells were infected, recovery was almost certain. Oral administration of the drug was less effective and less rapidly beneficial. Quinoline diphosphate was also injected intravenously into

experimental animals and field cases. Results were encouraging.

The antimalarial drugs used in this work have shown more promise than any other drug used by these investigators. The cycle of infection was apparently broken, and absence of carrier infection was established by animal inoculation. The experiments are being continued.—[*Herman Farley, C. C. Pearson, L. E. Foote, and I. O. Kliewer: The Use of Two Antimalarial Substances in the Treatment of Anaplasmosis. Am. J. Vet. Res.*, 10, (*July*, 1949) : 214-216.]

Repeated Brucellosis Vaccination

Field results indicate that most calves vaccinated with strain 19 between the ages of 4 and 8 months are protected from infection through the first pregnancy, but that there is a declining resistance beyond this period. Animals vaccinated as calves show an agglutination reaction which subsides within six months in most instances. Animals vaccinated as adults, or when sexually mature, retain an agglutination titer for a much longer time.

To study the effect of revaccination, a group of 43 calves, which had originally been vaccinated at the age of about 8 months, was divided into groups of 22 and 21. One group was revaccinated at 14 months, the other at 20 months of age.

Following revaccination, there was a rapid rise in the agglutinin titer. This then fell below 1 : 100 within three months (on the average), and was about 1 : 25 at the termination of first pregnancy. At this time, 1 reactor remained in each group.—[*D. T. Berman and B. A. Beach: Studies on Repeated Vaccination of Cattle with Brucella Abortus Strain 19. I. The Agglutination Response of Animals Vaccinated as Calves and Revaccinated as Young Adults. Am. J. Vet. Res.*, 10, (*July*, 1949) : 208-213.]

The Sulkowitch Test in Hypocalcemia

The Sulkowitch test is a simple procedure for measuring the calcium in urine, and thereby estimating the calcium level in the blood serum of cattle. Since there is a rough correlation between the level of serum calcium and the amount of calcium secreted in the urine, this test serves as an aid in the diagnosis and therpapy of bovine hypocalcemia in the milk-fever complex.

The testing reagent is an oxalate buffer mixture (oxalic acid 2.5 Gm., ammonium oxalate 2.5 Gm., glacial acetic acid 5 cc., and water to make 150.0 cc.) which, when mixed with the urine from normal cows, produces a precipitate of calcium oxalate. In hypocalcemic cows, there is no precipitate, the solution remaining clear. In such cases, the hypocalcemia can be corrected within the therapeutic range, instead of by injecting excessive amounts of the calcium solution. The test offers one additional way for the careful practitioner to arrive at a specific diagnosis and an accurate dosage schedule for correcting the deficiency, when present.—[*D. K. Detweiler and J. E. Martin: The Sulkowitch Test as a Guide in the Diagnosis and Therapy of Bovine Hypocalcemia. Am. J. Vet. Res.*, 10, (*July*, 1949) : 201-207.]

Ligation of the Digital Arteries in the Horse

Experiments were carried out on 7 horses, in 4 of which the medial and lateral digital arteries of all 4 feet were ligated simultaneously. A 4-cm. incision was made along the edge of the deep flexor tendon at the level of the proximal half of the first phalanx. Ligation of all the digital arteries was well tolerated. The hoof was cool for a short time after ligation, but no disturbance of function was observed. The following possible indications for ligation were suggested: hemorrhage, malignant neoplasm, elephantiasis, exostosis, laminitis, and removal of the cartilage of the third phalanx.—[*P. V. Emekeyev: On the Question of Simultaneous Ligation of the Digital Arteries of All the Limbs of the Horse. Veterinariya*, 26, (*May*, 1949) : 41.]—R.E.H.

Torsion of the Abomasum

The etiology of torsion of the abomasum in cattle is not clear, but apparently is not related to parturition, since it occurs in all stages of pregnancy, in heifers, and in bulls. The author considers the condition to be primary, and not secondary as many workers believe.—[*P. Emsbo: Torsio Abomasi in Cattle. Maanedskr. Dyrlaeger*, 60, (1948) : 228-233]—J. Egehoj.

Morphine-Magnesium Sulfate-Ether Narcosis in Horses

Each of 4 horses was narcotized three times at weekly intervals. The weights of the horses ranged from 310 kg. to 490 kg. (682 to 1,078 lb.). Morphine, 0.3 to 0.6 Gm. (gr. v-x), was administered subcutaneously, followed in three to five minutes by magnesium sulfate intravenously. The dose of magnesium sulfate was 0.25 Gm. per kilogram body weight at the first trial, 0.3 Gm. per kilogram at the second, and 0.4 Gm. per kilogram at the third. Two to three minutes after administration of magnesium sulfate, ether inhalation was begun and continued for fifteen to thirty-five minutes.

The duration of narcosis, as manifested by loss of the corneal reflex, was thirty-five to eighty-two minutes, depending on the dose of magnesium sulfate. There was complete relaxation of the striated muscles, and loss of pain sensation. Respiration was at first superficial and interrupted, especially with the large dose of magnesium sulfate, but after five to seven minutes of ether

inhalation, respiration became regular. Salivation was not excessive. No irritation of the respiratory tract was observed. The morphine did not cause constipation in this combination. Narcosis was followed by a period of five to eight minutes of motor stimulation, after which the animals rose to their feet, but lacked motor coördination for thirty minutes.

Ten per cent calcium chloride, 150 to 300 cc., administered intravenously, stimulated the heart and respiration, but did not rouse the animals nor increase the tonus of striated muscles.—[*P. D. Evdokimov: The Use of Magnesium with Ether and Morphine for Narcosis of Horses. Veterinariya, 26, (May, 1949): 37-38.*]—R.E.H.

BOOKS AND REPORTS

Reproduction in Domestic Mammals

Reproduction des Mammifères Domestiques must be ranked as a majestic addition to the scientific veterinary literature of this period. It not only embraces the details of the subject but also bridges the big gap between the knowledge of now and the out-moded classics of former days—and what a gap! Advances made in endocrinology alone put the old books among the "noble efforts."

The cytology, histology, anatomy, physiology, and endocrinology, of the genitals of the principal domestic animals, and the over-all mechanisms of reproduction are brought up-to-date with excellent descriptive material and illustrations. It is not a pathologist's nor a clinician's manual, but lays down the bare facts from which sound knowledge of these emerges. The author modestly claims no credit other than for the task of writing an authoritative compilation of fundamental importance to the science and the practice of veterinary medicine. In that mission he has not failed. The fact that more than 30 per cent of the book is devoted to sexual hormones illustrates the extent to which the older books on reproduction have to be revised.

For the teacher of any major branch of the veterinary curriculum, the biologist, and the veterinarian who reads French, the author has provided a precious volume.—[*Reproduction in Domestic Mammals (title translated). By G. Lesbouyries, Professor at Alfort. 714 pages. Illustrated. Vigot Frères, Paris. 1949.*]

Training the Dog

This book is presented by the author with the statement that "In our modern life of close contacts, particularly in the towns and cities, there is place only for the trained dog."

In the 11 sections of the book, Will Judy then goes on to tell in detail how the dog can be trained, not only for the simple and basic companionship and home habits, but also for proper conduct in public places and for performance of field work and other specialized duties. It is based upon the premise that the owner must lead, not push, the dog's mind—another way of saying that the trainer must know more than the trainee.

For the veterinarian who wants to review the latest methods of training dogs, not only in the simple manners which make them good companions, but also in the specialized duties which enable them to perform important tasks, the book will be worth more than it costs.—[*Will Judy: Training the Dog. 8th ed. Cloth. 180 pages. 81 illustrations. Judy Publishing Co., Judy Bldg., Chicago 16, Ill. 1948. Price $3.00.*]

Brucellosis in Puerto Rico

The author describes, from personal contact throughout, the spread of brucellosis in this island. Beginning with the introduction of Brucella-infected cattle in 1923, and tracing the appearance of the disease among native cattle in various parts of the island, the effect on an already poor community is shown.

The conclusion is drawn that "no other disease among livestock produces such major food losses, the production of milk, beef, and pork being instantly affected."

The rapidity and extent of spread is thought to be due to the assumption of many people that it was more important to prevent abortion than to prevent infection. Since strain 19 vaccine was reported by Buck and his coworkers in the U. S. Bureau of Animal Industry, in 1925, this procedure has been widely and successfully used. The book cautions, however, that careful judgment must be exercised in making additions to herds in which calf vaccination is practiced; and the vaccination program can not be successful unless accompanied by "certain sanitary measures" which are enumerated.—[*Studies of Brucella Infection in Puerto Rico. By P. Morales Otero, M.D. Cloth. 173 pages. Illustrated. 1948. Publisher or price not given.*]

Saline Solutions in Veterinary Medicine

The professors of Toulouse and Lyon have published a manual on the important subject of saline solutions in veterinary medicine. The authors admit that the word "serum" is wrong for designating therapeutically injected salt solutions, inasmuch as serum is the liquid portion of blood after the solids have been removed and cannot be used correctly for any other material. One cannot agree with the authors that custom justifies its use in any other sense, nor that science has the right to make its own language. In English literature, "serum" is univocal.

The use and composition of hypotonic, isotonic, and hypertonic solutions in the practice of veterinary medicine are described with emphasis on the function of water in its relation to body weight, blood volume, secretions, excretions, absorption, osmosis, regulating concentrations, and the way

water, ingested or endogenously produced, is handled by the intestines, the liver, the kidneys, the capillaries, and the cellular structure. In short, *l'equilibre hydrique* (water balance) is something to reckon with intelligently as to cause and effect in veterinary practice and salt (NaCl) is its regulator. The cation Na and its anion Cl quickly disperse to take part in the vital processes and, thus, create a constant hunger for more, that the body may not perish—such is characteristic of the background of this booklet. Its two chapters, physiology and pathology, are well organized thought-provoking, and of current importance in clinical work. The average proportion of water in the body is set roundly at 60 per cent, the NaCl concentration at 8 to 1,000, the Cl percentage of the principal domestic animals is tabulated, and the therapeutic uses of salines, parenterally, for various syndromes and diseases are described.—[*Les Sérums Salés en Médicine Vétérinaire. By E. Darraspen, R. Florio, and L. Joubert. 124-page booklet. Vigot Frères, Paris.* 1949.]

Diseases and Parasites of Poultry

The first edition of this book was issued thirteen years ago "to point the way toward a reduction in mortality among poultry flocks." The minor degree to which veterinarians have impressed the authors with their interest in, and ability to help achieve, this "reduction in mortality" is indicated to the reviewer. The first reference to the veterinarian appears on page 73, in the caption for figure 25 which reads, "Many practicing veterinarians are well equipped to render expert diagnostic service." This comes after complete chapters on The Mortality Problem, The Nature of Disease, The Anatomy of the Fowl, and Poultry Surgery; and in the chapter on diagnostic methods.

The foreword, by Dr. L. Van Es, does contain the statement, "Hygienic measures, rather than alleged 'remedies,' constitute as a whole the best protection against a number of diseases: whereas in others protective vaccination under veterinary guidance must be resorted to."

The book contains much information which practicing veterinarians could use to the advantage of their clients and to themselves. Only when they possess and use such information will authors suggest that poultry problems be referred to them.—[*Diseases and Parasites of Poultry. 4th ed. By E. H. Barger and L. E. Card. Cloth. 400 pages. Illustrated. Lea and Febiger, Philadelphia, Pa.* 1949. Price $4.00.]

Experimental Surgery

Based on the belief that "a dull lesson is no lesson," the author describes the surgical techniques used in teaching medical students as "the craft of surgery." The student who would become a capable human surgeon must learn the art of surgery from experience, repetition, and practice under a variety of circumstances. Much of this can be obtained by operating on animals, and much of the information gained can later be used to the benefit of other animals as well as of human beings.

The need for adequate or "surgical" anesthesia to provide a degree of restraint permitting accurate technique is emphasized by the statement that preoperative skin sterilization for dogs should be done only under anesthesia.

The book is divided into 29 chapters of which the first four deal with general considerations including care and feeding of animals, anesthesia, equipment, technique, sutures, and instruments. The remaining chapters discuss the technical procedures to be followed in surgery on specific organs and body tissues.

The forword, by Dr. C. F. Schlotthauer, stresses the importance to veterinarians of the chapters on thoracic surgery, intestinal obtruction, and intestinal surgery.—[*Experimental Surgery. 2nd ed. By J. Markowitz, University of Toronto. Cloth. 546 pages. Illustrated. The Williams and Wilkins Co. Mt. Royal and Guilford Ave., Baltimore, Md.* 1949. *Price* $7.00.]

Anatomy of the Dog

The book is intended to be "a simple guide to the dissection of the dog for students beginning the course in veterinary science." This has been accomplished with the aid of some 128 sketches (many in color), and 15 plates of radiographs.

The text begins "The dissection of the dog is best begun with the animal lying on its back," and then proceeds to describe each tissue and organ as it is presented in the usual dissection schedule. This description goes beyond the "simple guide" stage in many instances, thus adding value to the text as it may be used by the more advanced student, the research worker, and the veterinary surgeon.—[*Topographical Anatomy of the Dog. 5th ed. By O. C. Bradley, revised by Tom Grahame, Royal (Dick) Veterinary College, Edinburgh. Cloth. 319 pages. Illustrated. Published by Oliver and Boyd, 98 Great Russell St. W. C., London for The Macmillan Co., 60 Fifth Avenue, New York, N. Y.* 1948. *Price* $7.00.]

Brazilian Review

Complete sets of volumes 2 and 3 of the Review of the Faculty of Veterinary Medicine at the University of Sao Paulo have been received. The papers are published in Portugese, but many have summaries in English.

The papers deal with a complete range of veterinary problems, from basic physiologic chemistry and nutrition, to anatomy, parasitology, and field study of animal diseases.—[*Revista da Faculdade De Medicina Veterinaria, Universidade de Sao Paulo, Sao Paulo, Brazil, Vol. 2 (Fasc. 1 to 4), Vol. 3 (Fasc. 1 to 4).* 1948.]

THE NEWS

Detroit Convention A Great Success — Full Report to Appear Next Month

The Eighty-sixth Annual Meeting in Detroit in July was the second or third largest in Association history; its exact standing is subject to a final re-check of registration data. In any case, according to the judgment of independent and experienced observers, it was one of the best AVMA meetings from whatever angle it is judged. Even the weather was of the right kind.

Attendance exceeded 2,100 of which over 1,200 were veterinarians. The Committee on Local Arrangements distinguished itself by extremely capable management of convention activities under rather difficult and unusual circumstances — a two-ring affair, as it were, conducted in the two joint headquarters hotels.

Although the meeting this year was held a month earlier than usual, the Committee on Journal decided that the usual schedule of publishing convention proceedings should be adhered to, namely, the October JOURNAL will contain a full account of the Detroit session, including the Opening and General sessions and the Proceedings of the House of Representatives; the November JOURNAL will contain the reports of all committees which were presented and adopted at Detroit, and the section meetings. It is believed that adherence to the publication schedule of convention material which has been in effect for many years will be best for the sake of convenient reference in the future.

Start making your plans now for Miami Beach in 1950!

Eastern Section Meeting of WVA

The members of the Women's Veterinary Association held a luncheon meeting on June 24, 1949, at the Hotel Statler in New York, during the New York State Veterinary Medical Society convention. This marks the sixth meeting of the women veterinarians in the east.

s/PATRICIA O'CONNOR, *Secretary.*

National Dog Week

"Building Character Together" is the slogan for National Dog Week this year, and the activities during the observance, September 18-24, will be based on this theme.

Official poster design of the 1949 National Dog Week, to be observed September 18-24.

The Girl Scouts will participate in the observance on a country-wide basis. They will feature the responsibilities of dog care and training in their character-building and good-citizenship program.

Captain Will Judy's new book "Don't Call a Man a Dog" will be given to members of Man's Best Friend Club who contribute a minimum of $5 to the 1949 National Dog Week fund. This book contains facts about the mind of the dog, its five senses, personality, and virtues, as well as a chart of the 112 pure breeds.

WOMEN'S AUXILIARY

Mrs. Miller Elected Auxiliary President.— Mrs. V. H. Miller, Charleston, W. Va., was elected president of the Women's Auxiliary to the AVMA at the Detroit meeting in July. After graduating from The Ohio State University, she married Dr. Victor H. Miller in 1925. They have three children, Lois Ann, a senior at the West Virginia University; John Philip, a student at Virginia Polytechnic Institute; and Larry, a senior in high school.

Mrs. V. H. Miller, president.

Joining the Women's Auxiliary to the AVMA in 1937, she has served as first and fourth vice-president. She has been president of the West Virginia Auxiliary and also has been active and held office in the Parent-Teachers Association, the Federated Women's Club, the First Presbyterian Church of Charleston, and the D.A.R.

• • •

The Detroit Auxiliary Meeting.—The thirty-second session of the Women's Auxiliary to the

AVMA has written its record on the pages of history. Mrs. Runnells and her capable committee of Michigan women spent much time and effort in planning for the pleasure and comfort of the convention guests. There were many interesting and enjoyable activities—even the weather was cooperative.

The following officers of the Women's Auxiliary were elected:

President—Mrs. V. H. Miller, 2636 Kanawha Blvd., E., Charleston 1, W. Va.

First Vice-President—Mrs. H. W. Ayers, 916 W. 40th St., Oklahoma City, Okla.

Second Vice-President—Mrs. H. S. MacDonald, 51 Oakmont Rd., Toronto, Can.

Third Vice-President—Mrs. C. E. Bild, 890 North East 98th St., Miami 36, Fla.

Secretary—Mrs. C. L. Miller, 348 Forest Ave., River Forest, Ill.

Treasurer—Mrs. Charles H. Reid, 2001 Vista Del Mar Ave., Hollywood 28, Calif.

Parliamentarian—Mrs. C. M. Rodgers, Blandinsville, Ill.

Chairman, House of Representatives—Mrs. Charles C. Rife, 420 Edgewood, Ave., N. E., Atlanta, Ga.

Recorder, House of Representatives—Mrs. Russell A. Runnells, 511 Bailey St., East Lansing, Mich.

Chairman, Foreign Relations—Mrs. Anthony E. Bott, 6 Wilson Rd., Country Club Place, Belleville, Ill.

The reports of the delegates to the House of Representatives were an inspiration to all who were present. The real accomplishments take place in the state and regional organizations, and it was encouraging to see the energy and enthusiasm of each state and provincial auxiliary. As the delegates of the junior auxiliaries reported, one was impressed by the versatility, yet uniformity, of the programs of their organizations. These young women are interested in the veterinary profession, and the Women's Auxiliary to the AVMA will be richer for their membership.

With the expansion of the Women's Auxiliary came the need for a new constitution and it was voted at the meeting to adopt a constitution which would cover the requirements of our growing organization. Copies of the constitution as adopted will be mailed to all members of the Auxiliary.

s/(MRS. V. H.) FLORENCE MILLER, *President.*

• • •

Utah Auxiliary.—The Women's Auxiliary to the Utah Veterinary Medical Association held a business meeting at Roberts Hotel in Provo, June 24-25, 1949. Later, they were entertained at a luncheon, lecture, and a visit to Springville Art Gallery.

ALUMNI ACTIVITIES

Pennsylvania Alumni Society.—On June 18, 1949, 130 alumnae and alumni of the University of Pennsylvania School of Veterinary Medicine participated in the Alumni Day activities at the University. The scientific part of the program included clinical demonstrations prepared and executed by members of the veterinary faculty.

At the business meeting, Dr. E. T. Booth, secretary, reported a total of 470 members, this includes 100 per cent of the 1949 graduating class. Dean R. A. Kelser spoke of the developments at the veterinary school during the past year and announced the retirement of Dr. E. T. Booth after thirty-nine years of service at the University. Dr. Booth retires as emeritus professor of veterinary anatomy.

Officers for the ensuing year are Drs. George C. Poppinsiek, president; J. F. Kane, first vice-president; James V. McCahon, second vice-president; E. T. Booth, secretary-treasurer; and M. Josephine Deubler, historian.

The Society voted to sponsor an alumni banquet on Jan. 3, 1950, in conjunction with the annual conference for veterinarians.

After the luncheon in Pearson Hall, a bronze plaque, erected by the Veterinary Alumni Society in memory of Dr. George A. Dick, professor of animal industry from 1920 to 1948 and dean of the faculty from 1931 to 1946, was presented to the School of Veterinary Medicine by Dr. J. Alexander Webb. Dr. Dick's wife and son were guests of the Society on this occasion.

s/DONALD G. LEE, *Resident Secretary.*

COMMENCEMENT

Colorado A. & M. College.—Commencement exercises were held at the Colorado A. & M. College on June 10, 1949. Mr. Oscar Chapman, undersecretary of the interior, delivered the main address. The following were awarded the degree of doctor of veterinary medicine:

Harold F. Albers
Grant O. Boam
Keith L. Boulier
Theodore Burnstein
Roy G. Cheezig
Robert E. Clark
Jay R. Connell
Gordon E. Davis
Edward E. Dean
William M. Dickson
Woodrow W. Eastep
James W. Edwards
Lynn A. Griner
Mark M. Guffy
Walter R. Haas
Paul B. Hammond
Victor V. Hill
William M. Hindman
Frank W. Hunt, Jr.
John S. Lewis
Dario H. Marioni
Peter E. Olsen
Alton T. Righetti
Herman R. Rossoll
Norman A. Rothenberg
Robert Rubin
Albert Schaffer
Edward Stodtmeister
Ralph E. Thomas
Robert Von Tour
Rodney C. Walker
Victor Weickum
William J. Whatley
Grant E. Wiggins
Francis D. Wilcoxon
David H. Wixom

WITH DISTINCTION

Thomas F. Hagan
Walton Hawk
Wendell F. Hutchinson
Eugene T. Metz

WITH HIGH DISTINCTION

Elmer H. Gibson *Robert A. Kainer

*High for division

APPLICATIONS

The listing of applicants conforms to the requirements of the administrative by-laws—Article X, Section 2.

First Listing

BELDING, THEODORE C.
3380 Cedar Rd., Lansing, Mich.
D.V.M., Michigan State College, 1944.
Vouchers: L. H. LaFond and B. J. Killham.

BOTT, THOMAS L.
Coldwater, Mich.
D.V.M., Grand Rapids Veterinary College, 1912.
Vouchers: P. V. Howard and W. H. Beck.

BURTON, GEORGE V.
Tavistock, Ont.
B.V.Sc., Ontario Veterinary College, 1937.
Vouchers: T. L. Jones and C. D. Van Houweling.

CALHOUN, HARRY L.
R.F.D. 5, Marion, Mich.
D.V.M., McKillip Veterinary College, 1917.
Vouchers: H. H. Clark and I. F. Huddleson.

CARTER, FRANK A.
S. Second St., Carson City, Mich.
D.V.M., Michigan State College, 1938.
Vouchers: P. V. Howard and J. G. Hardenbergh.

CASSIDY, HOWARD J.
243 S. Elmwood Ave., Buffalo 1, N.Y.
D.V.M., Ontario Veterinary College, 1948.
Vouchers: H. F. Wilder and F. F. Fehr.

COLFLESH, JOSEPH H.
127 W. Main St., Somerset, Pa.
D.V.M., George Washington University, 1914.
Vouchers: I. Mitterling and H. B. Prothero.

CORONADO, FEDERICO
Mayia Rodriguez 111, Havana, Cuba.
D.V.M., University of Havana, 1909.
Vouchers: J. G. Hardenbergh and M. Stincer.

DANFORTH, ARNO
701 W. Franklin St., Winchester, Ind.
D.V.M., Ohio State University, 1929.
Vouchers: R. E. Kepner and E. K. LeDune.

DAVIDSON, JOSEPH B.
Brown City, Mich.
D.V.M., Michigan State College, 1946.
Vouchers: G. T. O'Dell and C. S. Bryan.

DIPPEL, J. R.
Mount Forest, Ont.
D.V.M., Ontario Veterinary College, 1947.
Vouchers: T. L. Jones and C. D. Van Houweling.

DRYSDALE, ROBERT J.
5960 Fulton St., Mayville, Mich.
D.V.M., Michigan State College, 1942.
Vouchers: B. J. Killham and C. S. Bryan.

ELLIOTT, RICHARD W., JR.
314 S. Washington St., Ypsilanti, Mich.
D.V.M., Ontario Veterinary College, 1938.
Vouchers: J. C. Schwabland and C. F. Wolf.

EVANS, EDWARD B.
Prairie View State College, Prairie View, Texas.
D.V.M., Iowa State College, 1918.
Vouchers: J. G. Horning and F. Hecker.

FEVERBACH, C. G.
Preston, Iowa.
D.V.M., Iowa State College, 1945.
Vouchers: J. H. Krichel and C. D. Van Houweling.

GLAZENER, WALTER W.
Hendersonville, N. Car.
D.V.M., Alabama Polytechnic Institute, 1943.
Vouchers: R. E. Taylor and A. B. Christian.

GLOVER, J. S.
Ontario Veterinary College, Guelph, Ont.
D.V.M., Ontario Veterinary College, 1920.
Vouchers: T. L. Jones and C. D. Van Houweling.

GOMEZ, CANDIDO
Avenida 3a, Entre 70 y 72, Miramar, Havana, Cuba.
D.V.M., University of Havana, 1929.
Vouchers: J. G. Hardenbergh and M. Stincer.

GREIF, EARL C.
2714 E. 79th St., Kansas City 5, Mo.
D.V.M., Kansas City Veterinary College, 1918.
Vouchers: G. L. Dunlap and J. L. Wells.

GROSSMAN, SAMUEL M.
2028 Collingwood, Detroit 6, Mich.
D.V.M., Michigan State College, 1943.
Vouchers: F. W. Meier and A. A. Marks.

HEINSEN, EDWARD C.
1025 N. Main St., Kokomo, Ind.
D.V.M., Ohio State University, 1932.
Vouchers: A. L. Keim and C. J. Griffin.

HOUGHTON, HERBERT R.
Grand-Ten Vet. Hosp., Farmington, Mich.
D.V.M., Michigan State College, 1940.
Vouchers: F. D. Egan and D. J. Francisco.

KEMP, DONALD T.
307 Marlborough, Detroit 15, Mich.
B.V.Sc., Ontario Veterinary College, 1910.
Vouchers: L. H. LaFond and R. V. Howard.

KOCH, EMIL L.
Plainfield, Iowa.
D.V.M., Iowa State College, 1937.
Vouchers: J. H. Krichel and C. D. Van Houweling.

KODING, ELMER J.
Gibbon, Minn.
D.V.M., Ontario Veterinary College, 1939.
Vouchers: E. W. Kreuger and H. J. Bunde.

HYDE, WALTER W.
Rt. 3, Jefferson, Ohio.
D.V.M., Grand Rapids Veterinary College, 1912.
Vouchers: W. R. Krill and J. G. Hardenbergh.

MORENO, FELIX A.
Calle 17, 25y, Vedado, Havana, Cuba.
D.V.M., University of Havana, 1934.
Vouchers: J. G. Hardenbergh and M. Stincer.

NEWBY, J. M.
Mt. Hamill, Iowa.
M.D.C., Chicago Veterinary College, 1910.
Vouchers: J. H. Krichel and C. D. Van Houweling.

NUTTALL, W. J.
134 Clarence St., Kingston, Ont.
D.V.M., Ontario Veterinary College, 1946.
Vouchers: T. L. Jones and C. D. Van Houweling.

PECK, EDWIN L.
206 Castano Ave., San Antonio, Texas.
D.V.M., Kansas City Veterinary College, 1913.
Vouchers: J. J. Martin and M. R. Clarkson.

PLESS, LOUIS R.
19149 Bretton Drive-23, Detroit, Mich.
D.V.M., Michigan State College, 1920.
Vouchers: L. H. LaFond and J. G. Hardenbergh.

RAULSTON, GILBERT L.
2211 Broad St., Chattanooga, Tenn.
D.V.M., Alabama Polytechnic Institute, 1944.
Vouchers: D. Coughlin and C. D. Van Houweling.

ROBERTS, JAMES F., JR.
Prosper Rd., Woodstock, Vt.
D.V.M., Michigan State College, 1938.
Vouchers: G. N. Welch and C. D. Van Houweling.

ROGAN, PATRICK A.
Knockeevin Church Rd., Greystones, Co. Wicklow, Ireland.
M.R.C.V.S., Veterinary College of Ireland.
Vouchers: J. G. Hardenbergh and C. D. Van Houweling.

SANDOVAL, MIGUEL A.
1481 Comstock Way, Oakland, Calif.
D.V.M., Universidad Nacional de la Plata, 1947.
Vouchers: J. M. Arburua and M. C. Levy.

SHANE, LESLIE L.
Box 147, Worthington, Minn.
D.V.M., Ontario Veterinary College, 1948.
Vouchers: L. V. Hartle and C. P. Schmidt.

SHARPE, G. F. O.
Milverton, Ont.
D.V.M., Ontario Veterinary College, 1934.
Vouchers: T. L. Jones and C. D. Van Houweling.

SWAN, L. C.
20 Court St., St. Catharines, Ont.
B.V.Sc., Ontario Veterinary College, 1934.
Vouchers: T. L. Jones and C. D. Van Houweling.

TEN BROECK, CHARLES W.
Camden, Mich.
D.V.M., Michigan State College, 1943.
Vouchers: L. B. Farnsworth and L. M. Hurt.

VANDER WALL, EDWIN R.
404 Boardman Ave., Traverse City, Mich.
D.V.M., Michigan State College, 1943.
Vouchers: Paul V. Howard and B. J. Killham.

VARLEY, JAMES R.
23 Seaman St., New Brunswick, N.J.
D.V.M., New York State Veterinary College, 1920.
Vouchers: J. D. Case, Jr. and E. R. Cushing.

WAKEFIELD, W. S.
Church St., Hardwick, Vt.
D.V.M., Ontario Veterinary College, 1938.
Vouchers: G. N. Welch and C. D. Van Houweling.

WOODWARD, JOHN B.
1208 E. 9th St., Merrill, Wis.
D.V.M., Michigan State College, 1943.
Vouchers: C. R. Curtis and R. C. Klussendorf.

WORKMAN, LESTER F.
Carthage, Ill.
D.V.M., McKillip Veterinary College, 1914.
Vouchers: G. J. MacLean and M. E. Howell.

WRIGHT, DAVID E.
1326 1st Ave., N.E., Cedar Rapids, Iowa.
D.V.M., Iowa State College, 1927.
Vouchers: R. M. Hofferd and G. B. Fincham.

Second Listing

BROWN, CHARLES W., U.S. B.A.I., Suite 1, 1019 High St., Des Moines 9, Iowa.

BRUNSCHER, LOUIS E., 1220 Vattier, Manhattan, Kan.

CARLOS, ENRIQUE R., 185 Marquez de Comillas, Manila, Philippines.

DODDS, R. CULLEN, Lake Crystal, Minn.

FLEMING, JOHN A., Aberbothrie, Alyth, Perthshire, Scotland.

FOGLE, ALLAN E., 2478 Neil Ave., Columbus 2, Ohio.

HURST, HAROLD L., Box 175, Whitestown, Ind.

LINDLEY, BENJAMIN J., 1834 Academy St., Winston-Salem, N. Car.

QUINN, JOHN F., 229 Linden St., East Lansing, Mich.

1949 Graduate Applicants

First Listing

The following are graduates who have recently received their veterinary degree and who have applied for AVMA membership under the provision granted in the Administrative By-Laws to members in good standing of junior chapters. Applications from this year's senior classes not received in time for listing this month will appear in later issues. An asterisk (*) after the name of a school indicates that all of this year's graduates have made application for membership.

Alabama Polytechnic Institute

ALLEN, GEORGE T., D.V.M.
Morrow, Ga.
Vouchers: S. C. Smock and J. M. Davis.

DOWDEN, NEALY H., D.V.M.
5056 Dixie Garden Dr., Shreveport, La.
Vouchers: B. F. Hoerlein and J. G. Hardenbergh.

WILLIAM, CHARLES L., D.V.M.
1815 Glenwood Apts., Rome, Ga.
Vouchers: W. J. Gibbons and J. F. Hokanson

Colorado A. & M. College

MARIONI, DARIO H., D.V.M.
Veterinary Medical Center, Turlock, Calif.
Vouchers: J. Farquharson and R. H. Jourdan.

Iowa State College

CALHOUN, EDWARD, D.V.M.
Box 362, Sterling, Ill.
Vouchers: C. H. Covault and D. W. Rawson.
DOUGAN, PAUL K., D.V.M.
Ankeny, Iowa.
Vouchers: P. E. Smith and J. A. Henderson.
ELLIS, STEWART C., D.V.M.
Minneota, Minn.
Vouchers: H. L. Foust and W. W. Merritt.
HUNTER, WILLIAM R., D.V.M.
133 Graham Ave., Whitewater, Wis.
Vouchers: H. E. Held and H. L. Marsh.
KILPATRICK, WARREN J., D.V.M.
Mediapolis, Iowa.
Vouchers: F. K. Ramsey and R. A. Packer.
PINKERT, PAUL A., D.V.M.
Pipestone, Minn.
Vouchers: W. H. Chivers and E. A. Schweim.
SCHROEDER, WILLIAM F., D.V.M.
160 Dogwood Ave., Park Forest, Ill.
Vouchers: C. D. Van Houweling and R. C. Klussendorf.
SIEMENS, JOHN W., D.V.M.
Seaton, Ill.
Vouchers: C. H. Covault and H. C. Wadleigh.
SKEWES, ARTHUR F., D.V.M.
Rt. 1, Grovean Farm, Union Grove, Wis.
Vouchers: G. R. Fowler and F. J. Fritchen.
STOPPEL, DONALD F., D.V.M.
Stewart, Minn.
Vouchers: C. H. Covault and D. B. Palmer.

Michigan State College

KUHLMAN, WILLIAM H., D.V.M.
14437 Michigan Ave., Dearborn, Mich.
Vouchers: G. T. McCarty and L. V. Jones.
LAW, FRANCIS E., D.V.M.
Box 208 C, Rt. 1, Dewitt, Mich.
Vouchers: R. A. Runnells and H. H. Ruhland.
MANZONI, ALEXANDER, D.V.M.
Hemlock, Mich.
Vouchers: E. T. O'Keefe and C. D. Van Houweling.
MATTESON, RICHARD E., D.V.M.
8027 Cahalan, Detroit 9, Mich.
Vouchers: F. W. Young and W. O. Brinker.
OSBORNE, JOHN C., D.V.M.
State College Station, Raleigh, N. Car.
Vouchers: C. S. Roberts and B. J. Killham.
SMITH, FREDERICK D., D.V.M.
822 S. Butler, Lansing, Mich.
Vouchers: F. E. Eads and R. G. Schirmer.
STERN, IRVING, D.V.M.
255 Washington Ave., Hempstead, N. Y.
Vouchers: P. V. Howard and B. J. Killham.

Ontario Veterinary College

STERNS, JOHN E., D.V.M.
15797 Mack Ave., Detroit 24, Mich.
Vouchers: P. V. Howard and T. L. Jones.

Second Listing

Alabama Polytechnic Institute

ANDERSON, WALTER C., D.V.M., Shuqualak, Miss.
ARLINE, ROBERT E., D.V.M., P. O. Box 478, Greenwood, Miss.
ASHBURN, JOHN F., D.V.M., 713 W. Market St., Johnson City, Tenn.
BARTLETT, G. RAYBURN, D.V.M., Newnan, Ga.
BATSON, MAURICE S., D.V.M., Rt. 2, Box 73, Eutaw, Ala.
BENSON, RICHARD E., D.V.M., 969 Springhill Ave., Mobile, Ala.
BOWERS, LAWRENCE E., D.V.M., P. O. Box 101, Elizabethton, Tenn.
BULLINGTON, THOMAS H., D.V.M., 516 Wright Mill Rd., Auburn, Ala.
CASE, HARLAN R., D.V.M., 2277 Conifer St., P. O. Box 446, Palm City, Calif.
CATON, HORACE E., D.V.M., 216 American Building, Orlando, Fla.
CHAMBERS, ARTHUR R., D.V.M., Box 405, Ocala, Fla.
GIDDENS, WILLIAM H., JR., D.V.M., Washington, Ga.
GRAY, MYRON C., D.V.M., 3534 Post St., Jacksonville, Fla.
GUYTON, THOMAS L., D.V.M., Auburn, Ala.
HARRIS, JOHN N., D.V.M., Munford, Tenn.
HARRIS, THOMAS W., D.V.M., Pulaski, Tenn.
HOLLAND, WILEY C., D.V.M., P. O. Box 362, Gainesvile, Fla.
HOLLOWAY, CLARKE L., D.V.M., 771 Holcombe Ave., Mobile, Ala.
JOHNS, HOWARD L., D.V.M., Huntingdon, Tenn.
KENMORE, GEORGE V., D.V.M., Box 941, Auburn, Ala.
KENNARD, THOMAS O., D.V.M., 29 W. 18th St., Jacksonville, Fla.
KNOX, GEORGE A., D.V.M., Abbeville, S. Car.
MARTIN, JOHN D., D.V.M., Mayo, Fla.
MAYFIELD, WILLIAM D., D.V.M., c/o Mrs. W. B. Westbrook, Carnesville, Ga.
MERRITT, BEN C., D.V.M., Lyons, Ga.
MOSHER, WILLIAM F., D.V.M., Box 310, Canton, Ga.
MUCKEL, FLORENCE A., D.V.M., c/o Dr. Fred M. Shigley, 337 U. S. Post Office and Court House, Bismarck, N. Dak.
PAYNE, SHERMAN L., JR., D.V.M., 2658 Old Shell Rd., Mobile, Ala.
POLK, HORACE H., D.V.M., Box 145, Picayune, Miss.
PORCH, LOUIE E., D.V.M., 809 Vaughn Ave., Opelika, Ala.
REEDY, HAROLD C., D.V.M., P. O. Box 112, Laurel, Miss.

REYNOLDS, EUGENE M., D.V.M., 713 W. Market St., Johnson City, Tenn.
RHODES, THEODORE M., D.V.M., Estill, S. Car.
RIEDEL, ROBERT L., D.V.M., 424 E. Drury Ave., Kissimmee, Fla.
SHEEHY, ROBERT W., D.V.M., Box 946, Auburn, Ala.
SMALLEY, DERRELL G., D.V.M., 122 Elm St., Dublin, Ga.
SMYTHE, HOWARD V., D.V.M., 829 Common St., Lake Charles, La.
THOMPSON, RUSSELL H., D.V.M., Corn Belt Laboratories, 215 Winstanley Ave., East St. Louis, Ill.
TIPTON, GLEN M., D.V.M., Gurley, Ala.
VAUGHN, JOHN B., JR., D.V.M., Calhoun City, Miss.
WIGGINS, AGEE M., D.V.M., School of Veterinary Medicine, Alabama Polytechnic Institute, Auburn, Ala.
WILLIAMS, WILLIAM P., D.V.M., 661 University Dr., S. W., Apt. 3, Atlanta, Ga.
YOUNG, GEORGE M., D.V.M., McComb Animal Hospital, McComb, Miss.

Colorado A. & M. College

ALBERS, HAROLD F., D.V.M., R. R. 1, Mitchellville, Iowa.
BOULIER, KEITH L., D.V.M., Cozad, Neb.
BURNSTEIN, THEODORE, D.V.M., 1366 Utica St., Denver, Colo.
CHEEZIG, RAY G., D.V.M., 225 Upton Ave., S., Minneapolis 5, Minn.
CLARK, ROBERT E., D.V.M., Watts Drive, c/o Lenore Clark, Bakersfield, Calif.
DAVIS, GORDON E., D.V.M., 689 S. Clarkson, Denver 9, Colo.
DICKSON, WILLIAM M., D.V.M., Dept. of Physiology, Coll. of Vet. Med., State College of Washington, Pullman, Wash.
EASTEP, WOODROW W., D.V.M., 818 Lancaster Way, Redwood City, Calif.
EDWARDS, JAMES W., D.V.M., Box 34, Sidney, Neb.
GIBSON, ELMER H., D.V.M., Cache Veterinary Hospital, South Main St., Logan, Utah.
GRINER, LYNN A., D.V.M., Rt. 4, Box 343, Fort Collins, Colo.
HAAS, WALTER R., D.V.M., Eaton, Colo.
HAGAN, THOMAS F., D.V.M., Rt. 6, Box 873, c/o J. W. Schroepfer, Visalia, Calif.
HAMMOND, PAUL B., D.V.M., 390 Southwest 4th St., Ontario, Ore.
HAWK, WALTON, D.V.M., Can Cristobal, N. Mex.
HILL, VICTOR V., D.V.M., 608 S. College Ave., Fort Collins, Colo.
HINDMAN, WILLIAM M., D.V.M., 5603 N. 4th St., Albuquerque, N. M.
HUNT, FRANK W., D.V.M., Box 357, Elk City, Okla.
HUTCHINSON, WENDELL F., D.V.M., Rt. 1, Salida, Colo.
KAINER, ROBERT A., D.V.M., Dept. of Vet. Med., U. of Idaho, Moscow, Idaho.
LEWIS, JOHN S., D.V.M., 572 S. Amalfi Dr., Santa Monica, Calif.
OLSEN, PETER E., D.V.M., 180 Longwood Ave., Boston, Mass.
RIGHETTI, ALTON T., D.V.M., 124 S. Vine St., Fergus Falls, Minn.
ROSSOLL, HERMAN R., D.V.M., Rt. 2, Box 189 C, San Diego 10, Calif.
ROTHENBERG, NORMAN A., D.V.M., Box 208, Adelanto, Calif.
RUBIN, ROBERT, D.V.M., 270 Eagle St., North Adams, Mass.
SCHAEFER, ALBERT, D.V.M., Ellenville Vet. Hosp., Laurenkill Rd., Rt. 209, Ellenville, N. Y.
STODTMEISTER, EDWARD H., D.V.M., 325 Locust, Ft. Collins, Colo.
THOMAS, RALPH E., D.V.M., 3731 Walnut St., Long Beach 7, Calif.
WALKER, RODNEY C., D.V.M., 2910 E. Highway 24, Colorado Springs, Colo.
WEICKUM, VICTOR, D.V.M., 935 Washington, Loveland, Colo.
WHATLEY, WILLIAM J., D.V.M., Kimball Creek Ranch, DeBeque, Colo.
WIGGINS, GRANT E., D.V.M., 322 Grant St., Longmont, Colo.
WILCOXON, FRANCIS D., D.V.M., Animal Clinic, Rt. 2, Lincoln, Neb.
WIXOM, DAVID H., D.V.M., Box 126, Cambria, Calif.

Iowa State College

BENBROOK, STANLEY C., D.V.M., 2318 Baker St., Ames, Iowa.
COOPER, CARLOS M., D.V.M., 16 N. 4th St., Platteville, Wis.
KEMPEMA, JOHN A., D.V.M., Worthington, Minn.
MCDONALD, QUENTIN F., D.V.M., Lorimor, Iowa.
MORLEY, LELAND C., D.V.M., 1102 Snowden Pl., Laurel, Md.
PEAK, FRANK A., D.V.M., St. Charles, Iowa.
PRESTON, WILLIAM R., D.V.M., Crystal Lake, Iowa.
RIBELIN, WILLIAM E., D.V.M., 2823 S. Harlem Ave., Berwyn, Ill.
THONE, JAMES O., D.V.M., Blair, Neb.
TILLIE, JOHN E., D.V.M., 208 Cedar St., Muscatine, Iowa.
WIERSIG, DONALD O., D.V.M., Prairie du Sac, Wis.

Michigan State College

ALEXANDER, ALONZO D., D.V.M., 1359 High St., Bowling Green, Ky.
ANDERSON, JOHN L., D.V.M., 257 Sixth Ave., S., South St. Paul, Minn.
BALL, WILLIAM A., D.V.M., Marne, Mich.
BELL, IVERSON C., D.V.M., 6007 Hartford, Apt. 101, Detroit, Mich.
CARNEY, THOMAS B., D.V.M., Eyota, Minn.
CRANDELL, HARRY T., JR., D.V.M., Cass City, Mich.

CRANDELL, ROBERT A., D.V.M., 513 Woodworth Ave., Alma, Mich.
DOWDYE, EDWARD H., D.V.M., 218 Albert Ave., East Lansing, Mich.
DUMAS, RAYMOND L., D.V.M., 306 Knoxville Ave., Peoria, Ill.
ELSESSER, ALBERT A., D.V.M., 146 S. Broad St., Hillsdale, Mich.
EVERETT, MARGARET A., D.V.M., Rt. 1, Box 124, DeWitt, Mich.
FAY, LAWRENCE D., D.V.M., Rogers City, Mich.
FERSTL, HENRY T., D.V.M., 917 D, Walnut Lane East Lansing, Mich.
HAGENBUCH, WARREN M., D.V.M., Blissfield, Mich.
HEFLER, ANN, D.V.M., 79 Smith Rd., Milton, Mass.
HIBBARD, MAX E., D.V.M., 172 Waterman Ave., Coldwater, Mich.
HULEN, RALPH A., D.V.M., Fulton, Mo.
JOHNSTON, RICHARD L., D.V.M., 834 E. Main St., Owosso, Mich.
JOHNSTON, RAYMOND F., D.V.M., 124 University Dr., East Lansing, Mich.
JORDAN, JOHN A., D.V.M., Lexington, N. Car.
KITZMAN, LOUIS M., D.V.M., 13347 Sherman Way, North Hollywood, Calif.
KRAUSE, ORVILLE C., D.V.M., 2211 S. Fulton St., Armada, Mich.
LADU, ROBERT W., D.V.M., 404 Evergreen, East Lansing, Mich.
LICKFELDT, WESLEY E., D.V.M., 114 Charles St., East Lansing, Mich.
McDONALD, LESLIE E., JR., D.V.M., 362 N. Main, West DePere, Wis.
MAYEDA, BRYAN, D.V.M., Rt. 1, Box 157, Loomis, Calif.
MIGLIACCIO, NICHOLAS L., D.V.M., 955 West Ave., Ocean City, N. J.
MINTON, LLOYD G., D.V.M., 714 S. Main St., Waupaca, Wis.
PADWEE, S. HOWARD, D.V.M., 83 Farley Ave., Newark 8, N. J.
RASMUSSEN, KENNETH, D.V.M., Sisseton, S. Dak.
RUWITCH, JOSEPH, D.V.M., 443 W. State St., Cheboygan, Mich.
SCOTT, RONALD M., D.V.M., 5525 Mead Ave., Dearborn, Mich.
SMITH, ROBERT R., D.V.M., Box 747, Portland, Mich.
SOFIAN, PETER, D.V.M., 14983 Collingham, Detroit, Mich.
STERNER, GLENN E., D.V.M., Rt. 2, Ionia, Mich.
TURNER, ROBERT K., D.V.M., Rt. 1, Lapel, Ind.
WALTERS, BARBARA P., D.V.M., 5432 W. Potomac, Chicago 51, Ill.
WHEELER, RICHARD A., D.V.M., 5515 Tujunga Ave., North Hollyood, Calif.

New York State Veterinary College

ANDERSON, HOWARD F., D.V.M., 15 Orlando Ave., Kissimmee, Fla.
BAKER, LYLE A., D.V.M., Knoxville, Pa.
BIRCHARD, RAY F., D.V.M., New York State Vet. Coll., Ithaca, N. Y.
BLANEY, ARTHUR J., D.V.M., 3908 Chestnut St., Philadelphia 4, Pa.
BUCKLEY, DONALD F., D.V.M., 22-35 Elmwood Ave., Buffalo 17, N. Y.
CHRISTENSEN, GEORGE C., D.V.M., 232 Linden Ave., Ithaca, N. Y.
COHEN, BENNETT J., D.V.M., 214 Dryden Rd., Ithaca, N. Y.
COSGROVE, ALBERT S., D.V.M., 90 Beekman St., Pittsburg, N. Y.
DANIELS, WILLARD H., D.V.M., Millbrook Rd., Middletown, Conn.
DAVIS, F. LANGDON, JR., D.V.M., Sunk Mine Farm, Cold Spring, N. Y.
DICKINSON, BRUCE R., D.V.M., Ridge Rd., Ontario, N. Y.
DINGLEY, DANA C., D.V.M., 25 Maple Ave., Farmington, Maine.
FAGAN, MORTIMER M., D.V.M., 1931 E. 3rd St., Brooklyn 23, N. Y.
FREDERICK, CHRISTABEL H., D.V.M., 1603 Olivewood Ave., Lakewood, Ohio.
GLICK, STANLEY, D.V.M., Mountaindale, N. Y.
GOLDMAN, ROBERT A., D.V.M., 153-15 125 Ave, Jamaica 4, L. I., N. Y.
GREENE, WILLIAM A., D.V.M., Rt. 4, Ithaca, N. Y.
HSIA, TING-YOU, D.V.M., Central Bureau of Animal Industry, Nanking, China.
JENSEN, WAYNE I., D.V.M., 105 DeWitt Pl., Ithaca, N. Y.
KEATON, WILLIAM H., D.V.M., 809 E. State St., Ithaca, N. Y.
LUNNA, RICHARD C., D.V.M., Somerset Vet. Infirmary, Somerville, N. J.
McCORMICK, JOHN E., D.V.M., 2217 Kensington Ave., Snyder 21, N. Y.
McENERNEY, PHILIP J., D.V.M., 306 University Ave., Ithaca, N. Y.
MILLER, ALBERT W., D.V.M., Butler Rd., Sauquoit, N. Y.
OSGOOD, MURIEL, D.V.M., Cumberland Center, Maine.
QUIMBY, HERBERT H., D.V.M., 23 Webster St., Malone, N. Y.
REDDICK, HARRY E., JR., D.V.M., Rt. 1, Box 295, Santa Paula, Calif.
REINHARD, KARL R., D.V.M., 514 E. Veterans Pl., Ithaca, N. Y.
SCHMITT, WILLIAM F., D.V.M., 8621 54th Ave., Elmhurst, L. I., N. Y.
SHAPIRO, MOE, D.V.M., 907 E. 156th St., Bronx, N. Y.
SMITH, MARIANNE F., D.V.M., 320 W. 86th St., New York 24, N. Y.
TAYLOR, WILLIAM E., D.V.M., Morrisville, N. Y.
VARGOSHE, RICHARD E., D.V.M., 127 Dryden Rd., Ithaca, N. Y.
WARD, GERALD M., D.V.M., 223 Thurston Ave., Ithaca, N. Y.
WEBSTER, DONALD E., D.V.M., c/o Dr. R. L. Brown, Pine Plains, N. Y.
WHEATON, JAMES R., D.V.M., 210 W. Filbert St., East Rochester, N. Y.

WHITE, RAYMOND H., D.V.M., Cedar City, Utah.
WIGHT, JAMES B., D.V.M., 112 Puueo St., Hilo, Hawaii.
WILLIAMSON, JANE L., D.V.M., 13-09 Plaza Rd., Fair Lawn, N. J.
YASGUR, ISIDOR, D.V.M., 240 Linden Ave., Ithaca, N. Y.

Ontario Veterinary College

ABELSETH, MELVIN K., D.V.M., Glidden, Sask.
BUCKLEY, LLOYD F., D.V.M., 133 Hartzell Rd., St. Catharines, Ont.
CHUTE, HAROLD L., D.V.M., Path. Div., N. S. Agri. Coll., Truro, N. S.
CLARK, FRED M., D.V.M., 316 Ave. E. North, Saskatoon, Sask.
FLOWERS, FRANKLIN H., D.V.M., 11 Cliff St., Copper Cliff, Ont.
HARRISON, WILLIAM G., D.V.M., Box 56, Crossfield, Alta.
HOUSE, DAVID, D.V.M., MacDonald College, P. O., Ste. Anne de Bellevue, Que.
KELLY, JOHN J., D.V.M., Brussels, Ont.
LANCASTER, ROBERT L., D.V.M., 506 14th Ave., N. E., Calgary, Alta.
MOORE, WILLIAM G., D.V.M., c/o Dr. L. R. Haubrich, Claremont, N. H.
STINSON, ROBERT G., D.V.M., Milford Station, N. S.
THOMPSON, JOHN P., D.V.M., Matheson, Ont.
WEIR, GLENN K., D.V.M., Aberdeen, Sask.
YORK, ALEXANDER M., D.V.M., 31 Woodbine St., Chilliwack, B. C.

University of Pennsylvania

BERGSTROM, NORMA I., V.M.D., Rt. 1, Quakertown, Pa.
BIXLER, WILLIAM B., V.M.D., 144 E. Main St., Ephrata, Pa.
BUTT, ELINOR, V.M.D., Yellowspring Rd., Paoli, Pa.
COLEMAN, MILTON, V.M.D., 2608 N. 33rd St., Philadelphia 32, Pa.
DURBIN, CHARLES G., V.M.D., 1221 W. Cambria St., Philadelphia 33, Pa.
FELDMAN, KENNETH J., V.M.D., 252 S. 54th St., Philadelphia 39, Pa.
FINNEY, GARLAND E., JR., V.M.D., Onancock, Va.
FORTUNE, ELIZABETH A., V.M.D., 46 Lincoln St., Waltham, Mass.
GILMAN, ARNOLD R., V.M.D., University of Pennsylvania, School of Vet. Med., Philadelphia 4, Pa.
GRAVES, VERNIE M., JR., V.M.D., Box 484, Culpeper, Va.
*HINTON, JANE, V.M.D., Dedham St., Canton, Mass.
KAHAN, IRA H., V.M.D., 4618 Chester Ave., Philadelphia, Pa.
MELLMAN, SIDNEY L., V.M.D., 322 S. Iseminger St., Philadelphia, Pa.
MICHEL, ROBERT L., V.M.D., 835 E. Price St., Philadelphia 38, Pa.

*Erroneously given first listing under New York State Veterinary College in the August JOURNAL.

MORGAN, MARSHALL B., V.M.D., 1606 Moore St., Huntingdon, Pa.
MORRISON, ARTHUR F., V.M.D., 425 S. Richard St., Bedford, Pa.
MULLER, GEORGE R., V.M.D., 506 W. Coulter St., Philadelphia 44, Pa.
OTTO, EDWARD F., V.M.D., 119 Brookside Ave., Irvington, N. J.
PACKER, WALTER S., V.M.D., 3431 Walnut St., Philadelphia 4, Pa.
PALMER, GEORGE M., V.M.D., 727 Warren St., Havre de Grace, Md.
PATTERSON, WILLIAM C., JR., V.M.D., Royalton, Pa.
PERCIVAL, RICHARD C., V.M.D., 21 Buckwheat Rd., Franklin, N. J.
RICHARDS, ARTHUR, JR., V.M.D., 15 N. Scott Ave., Glenolden, Pa.
ROTHBERG, ALVIN, V.M.D., 331 Keer Ave., Newark 8, N. J.
SWART, JAMES H., V.M.D., P. O. Box 289, Waynesburg, Pa.
WALTZ, HARVEY C., V.M.D., R. D. 2, West Chester, Pa.
WRIGHT, CLIFFORD F., V.M.D., Box 16, Butztown, Pa.

Quebec Veterinary College

DUMAS, PAUL-EMILE, D.V.M., Saint Leonard d'Aston, Co. Nicolet, Que.

Texas A. & M. College

BRYSON, THEODORE F., D.V.M., 1618 Templeman St., Shreveport, La.
HART, GARLAND J., D.V.M., 406 N. Parkway, El Dorado, Ark.
MCCRORY, HARVEY F., D.V.M., Rt. 2, Kosciusko, Miss.
OWEN, ROBERT G., D.V.M., Box 4717, College Station, Texas.
OWEN, THOMAS B., JR., D.V.M., Sinton, Texas.
REES, ALVIN R., JR., D.V.M., 110 Stanford, San Antonio, Texas.
THOMASSON, GEORGE R., D.V.M., 3166 Los Felis Blvd., Los Angeles 26, Calif.
WILKINS, JOHN E., JR., D.V.M., 4527 Stonewall St., Greenville, Texas.

State College of Washington

WEST, MARDELL L., D.V.M., 1304 3rd St., Lewiston, Idaho.
WILLIAMS, ERNEST, D.V.M., 2839 Broderick St., San Francisco 23, Calif.

U. S. GOVERNMENT

Public Health Service Refresher Courses.—The Communicable Disease Center, Laboratory Division, Public Health Service, will give the following refresher courses in laboratory diagnosis from Sept. 12 to Dec. 16, 1949:

Laboratory diagnosis of parasitic diseases,

six weeks, from September 12 to October 21.

Laboratory diagnosis of bacterial diseases, Part 2, five weeks, from October 31 to December 2.

Laboratory diagnosis of rabies, one week, from November 14 to November 18.

Advanced enteric bacteriology, two weeks, from December 5 to December 16.

Information and applications should be requested from the Chief, Laboratory Division, Communicable Disease Center, 291 Peachtree Street, N. E., Atlanta, Ga.

s/R. F. REIDER, *Senior Surgeon in Charge, Special Services.*

• • •

Dr. Billings Honored.—Dr. William A. Billings (CORN '18), of the University of Minnesota, St. Paul, was honored by Secretary of Agriculture Charles F. Brannan on May 16, 1949, for exceptional or meritorious contributions to public service, at an annual ceremony in recognition of outstanding performance on the part of employees of the U.S. Department of Agriculture.

Dr. Billings was given the Superior Service award, represented by a silver medal, a lapel button, and certificate presented by Secretary Brannan with the following citation: "For promoting and popularizing the confinement plan which reduced the mortality rate in turkeys caused by blackhead infection by approximately 75 per cent; and for the prevention and control of other livestock diseases."

s/C. D. LOWE, *Extension Animal Husbandman.*

• • •

Veterinary Personnel Changes.—The following changes in the force of veterinarians in the U.S. BAI are reported as of July 22, 1949, by Personnel Officer W. A. DeVaughn.

TRANSFERS

Richard W. Carter, from Beltsville, Md., to Lansing, Mich.

Philip D. Cazier, from Topeka, Kan., to Mexico City, Mexico.

John J. Garvey, from Mexico City, Mexico, to Trenton, N. J.

Frank G. Hamilton, from Phoenix, Ariz., to El Paso, Texas.

Oren E. Herl, from Beltsville, Md., to Washington, D. C.

Ora K. Hoffman, from College Park, Md., to Baltimore, Md.

Milo L. Johnson, from Mexico City, Mexico, to Topeka, Kan.

John R. Langridge, from Mexico City, Mexico, to New Orleans, La.

Robert Mitchell, Jr., from Mexico City, Mexico, to Cincinnati, Ohio.

Haldor T. Mydland, from Mexico City, Mexico, to Topeka, Kan.

Don I. Skidmore, from Beltsville, Md., to Washington, D.C.

Dale Suplee, from Beltsville, Md., to Charleston, W. Va.

Arthur L. Tellejohn, from Beltsville, Md., to Washington, D. C.

Elwood E. Wedman, from Mexico City, Mexico, to Topeka, Kan.

Moses R. Zinober, from St. Paul, Minn., to Beltsville, Md.

SEPARATIONS

Thomas C. Berry, Montgomery, Ala.
Alfred J. Bruns, Indianapolis, Ind.
George H. Caldwell, Reno, Nev.
Louis D. Cheiester, Ft. Worth, Texas.
Harlo R. Clark, Boston, Mass.
William K. Cobb, Olympia, Wash.
Roy L. Collins, Kingston, N. Y.
Ebner A. Corbin, Des Moines, Iowa.
Charles J. Curtin, Los Angeles, Calif.
C. Alvin Eshelman, Olympia, Wash.
Lynuel C. Fish, Indianapolis, Ind.
Roy F. Gard, Topeka, Kan.
Fernando Goyco-Monagas, San Juan, P.R.
John D. Hall, Birmingham, Ala.
John W. Hazelrig, Birmingham, Ala.
John A. Hennessy, Mexico City, Mexico.
Louis P. Heydecker, Kansas City, Kan.
James R. Houchins, Columbia, S. Car.
George O. Johnson, Mexico City, Mexico.
Otto E. Jung, St. Louis, Mo.
Wayne W. Kirkham, Indianapolis, Ind.
Gelfer Kronfeld, Mexico City, Mexico.
Edward Lapple, Sioux City, Iowa.
Edward J. McLaughlin, College Park, Md.
William S. Monlux, Beltsville, Md.
Alexander B. Munson, Beltsville, Md.
Paul H. Pugh, St. Paul, Minn.
Erling R. Quortrup, Pullman, Wash.
Harry Radcliffe, Los Angeles, Calif.
Uric B. Reynolds, Indianapolis, Ind.
Clarence L. Ries, Los Angeles, Calif.
Garret W. Riley, Moultrie, Ga.
William G. Saunders, Chicago, Ill.
Robert C. Schock, Mexico City, Mexico.
Mathias E. Schwab, S. St. Paul, Minn.
Jack W. Smart, Omaha, Neb.
Walter E. Snyder, II, Mexico City, Mexico.
George D. Tuttle, Dubuque, Iowa.
Paul H. Wallace, Indianapolis, Ind.
Nelson H. Whitehill, Baltimore, Md.
James A. Zimmerman, Spokane, Wash.

AMONG THE STATES AND PROVINCES

California

Q Fever.—Q fever studies in southern parts of the state have shown that *Coxiella burnetii* (=*Rickettsia burneti*) resists pasteurization to a greater extent than other rickettsiae and, therefore, in some degree accounts for some of the milk-borne cases in which milk had been absolved as a carrier

of the infection. Studies were made of the degree of heat and time of exposure required to attenuate the causal organism. That the mammary gland of cows, goats, and sheep is a reservoir of *C. burnetii*, and milk one of its carriers, has been confirmed.—*From Pub. Health Rep., April 22*, 1949.

• • •

San Diego County Association.—New officers of the San Diego County Veterinary Medical Association are Drs. W. W. Myers, president; F. B. Walker, Jr., vice-president; and R. J. McFarland, secretary-teasurer.

The regular meeting of the Association was changed to the fourth Tuesday of each month.

s/R. J. MCFARLAND, *Secretary.*

Illinois

Dr. Boley Accepts Appointment.—Dr. Lloyd E. Boley (KSC '32), associate professor, University of Illinois College of Veterinary Medicine, has been appointed professor and head of the Department of Veterinary Clinical Medicine. Dr. Boley served as an assistant in veterinary pathology and hygiene at the College prior to his appointment.

• • •

Incidence of Undulant Fever.—In a check of the incidence of undulant fever in a private practice surrounding the Chicago Stockyards, 100 blood-tested patients yielded but 1 reactor, a man who had suffered an acute attack of brucellosis five years ago. The Division of Laboratories, Department of Health, conducted the survey.—*J. Am. M. A., May 28*, 1949.

• • •

Brucellosis Work.—The March report of Inspector-in-Charge Howlett to the Washington office signalized the testing of 29,489 cattle for brucellosis during February. Among these, there were 1,515 reactors and 2,578 suspects. There were 12,054 calves and 44 adults vaccinated with strain 19 during that month. More than half of this work was done by the local practitioners, the rest by federal or state veterinarians. Taken as a criterion, this brief document reveals much as to the incidence of the disease and of the control program in vogue.

Kansas

Corrigendum.—Dr. F. W. Crawford is one of the six vice-presidents of The National Association of Federal Veterinarians, and not president, as reported in an editorial in the July JOURNAL.

s/A. E. CANNON, *Secretary, The National Association of Federal Veterinarians.*

• • •

State Board of Medical Examiners.—The Kansas State Board of Veterinary Medical Examiners was in session at the Kansas State College, Manhattan, May 24-25, 1949. Members are Drs. F. L. Hart, Hiawatha, president; C. W. Bower, Topeka, secretary; and O. W. Morris, Parsons.

Louisiana

Dr. Flower Retires.—Dr. E. P. Flower (USCVC '00), for forty-one years executive officer and secretary of the Louisiana Livestock Sanitary Board, resigned this position effective July 1, 1949. No successor has yet been named.

One of the oldest state employees in point of service, Dr. Flower served under 15 governors and, although retired, will continue to serve the Board in an advisory capacity. Members of the Board presented him with a handsome gold watch, suitably engraved, in recognition of his contribution to the livestock industry.

Said the Baton Rouge *Weekly Market Bulletin* (July 14, 1949): "If there had been no Dr. Flower, Louisiana still might be infested with the cattle fever tick, as well as many other livestock diseases. He had the courage of his convictions, he showed no favoritism; he was, at times, villified and threatened; but he never wavered. . . . Any monument erected in his honor, however elaborate, will appear puny beside that monument he slowly and unwittingly built—a prosperous livestock industry."

s/R. B. LANK, *Secretary.*

• • •

Personal.—Dr. L. C. Grumbles (TEX '45) has resigned his position at Louisiana State University, specializing in poultry diseases, to accept a position on the faculty of Texas A. & M. College, School of Veterinary Medicine.

Dr. C. H. Bridges (TEX '45) has accepted the position at Louisiana State University vacated by Dr. Grumbles.

s/R. B. LANK, *Secretary.*

Maine

State Association.—The summer meeting of the Maine Veterinary Medical Association was held at Overlook Farm, South Casco, on July 27, 1949. After the business session, President A. Coombs reported on his trip to Detroit as AVMA delegate from Maine.

Recreation included horseshoes, softball, and swimming. The real country chicken dinner, for which the summer meeting is so well known, was served.

s/S. W. STILES, *Secretary.*

Maryland

Veterinarian Involved in Lawsuit.—The widow of Jockey Benny Leggett who was killed in a fall at the Fairgo track last year has filed a damage suit for $250,000 in the Cumberland Circuit Court against Dr. A. James Gross of Rocks, along with the Cumberland Fair Association and three other defendants.

Among Mrs. Leggett's contentions is that Dr. Gross' Alpine Boy, the mount involved, was 100 per cent blind in the right eye and 80 to 90 per cent blind in the left eye from periodic ophthalmia and was registered by the Maryland Racing Commission as "12 years old and 'denerved.'" Though the particular neurotomy is not men-

tioned, it is, obviously, held responsible for the ill-fated stumble.

Massacusetts

Dr. McComb Accepts Public Health Post.—Dr. James A. McComb (OSU '23) was appointed acting director of the Division of Biologic Laboratories for the Massachusetts Department of Public Health. Dr. McComb succeeds Dr. Geoffrey Edsall who has accepted the position of professor of bacteriology at Boston University.

Dr. McComb, who has been with the department for 22 years, entered the Division of Biologic Laboratories as assistant bacteriologist and a year later was appointed senior bacteriologist. He has served as assistant director of the division since 1942.

A veteran of World War I, Dr. McComb served in the Army as a sergeant in the field artillery. He was a lieutenant in the Army Reserve Corps for nine years.

He is a member of the AVMA and of the American Public Health Association.

• • •

Angell Memorial Animal Hospital Presents Scientific Program.—On July 15, a two-hour program of short papers and case reports was presented by former interns and associates of the Angell Memorial Animal Hospital in the auditorium of the Hospital at 180 Longwood Ave. Several members of the Massachusetts Veterinary Association attended.

s/GERRY B. SCHNELLE, *Secretary.*

Michigan

Dr. Clark to Head Department of Surgery and Medicine.—Dr. C. F. Clark (MSC '29) was appointed professor and head of the Department of Surgery and Medicine and director of the Large Animal Clinic at the Michigan State College School of Veterinary Medicine, effective Sept. 1, 1949. He relieves Dean C. S. Bryan as head of the Department of Surgery and Medicine. Dr. Bryan's time will be occupied with his duties as dean and in research.

Dr. C. F. Clark

Upon graduation in 1929, Dr. Clark joined the staff of the Department of Animal Pathology at Michigan State College where he remained until June, 1946, when he was appointed to the office of state veterinarian of Michigan. He has been active in the U.S. Livestock Sanitary Association, the AVMA, and state and local veterinary and livestock organizations.

s/C. S. BRYAN, *Dean.*

Missouri

Joins Veterinary Staff.—Professor B. B. Roseboom, B.S., M.S., joined the staff of the University of Missouri College of Veterinary Medicine as professor of physiology, on September 1.

Mr. Roseboom has been professor and head of the Department of Physiology and Pharmacology since it was organized in 1923.

s/A. J. DURANT, *Chairman, Department of Veterinary Science.*

North Carolina

State Officers.—Officers elected at the forty-eighth annual meeting of the North Carolina State Veterinary Medical Association on June 28-29, 1949, are Drs. J. C. Bateman, Greenville, president; C. W. Young, Mocksville, president-elect; G. R. Armstrong, Charlotte, vice-president; J. H. Brown, Tarboro, secretary-treasurer; W. D. Collins, Winston-Salem, N. B. Tyler, Raleigh, and R. P. Huffman, Wilmington, members of the Executive Committee; A. A. Husman, Raleigh, delegate to the AVMA House of Representatives; M. M. Leonard, Asheville, alternate. Dr. J. H. Brown was nominated for resident secretary to the AVMA.

An invitation from the South Carolina State Veterinary Medical Association to meet with their Association at Myrtle Beach, S. Car., in 1950 was accepted.

Six new members were received into the North Carolina Association, making a total membership of 144. There are approximately 180 veterinarians in the state.

s/J. H. BROWN, *Resident Secretary.*

• • •

Dr. Rollins New State Veterinarian.—On July 8, 1949, Dr. L. J. Faulhaber resigned his position as state veterinarian of North Carolina.

State Commissioner of Agriculture Ballentine appointed Dr. Hal J. Rollins (KSCVC '16), of Rockingham, to fill this position. Dr. Rollins has practiced at Rockingham since his graduation. He has just completed ten years of service on the North Carolina Board of Veterinary Medical Examiners.

s/J. H. BROWN, *Resident Secretary.*

Ontario

Refresher Course and Province Association.—The refresher course and meeting of the Ontario Veterinary Association was held at Ontario Veterinary College, Guelph, on July 21-22, 1949. The program follows.

Dr. D. L. T. Smith, Department of Pathology, Ontario Veterinary College: "Canine Hepatitis."

Dr. A. A. Kingscote, head, Department of Parasitology, Ontario Veterinary College: "Insecticides and Parasiticides" (with illustrations).

Dr. D. A. Barnum, Department of Bacteriology: "Mastitis."

Dr. J. A. Henderson, Department of Medicine: "Experiences relative to Cattle Practice in South America."

Drs. J. D. Schroder and N. A. Fish, Department of Pathology: "Listerella Infection in Ontario."

Dr. J. P. W. Gilman, Department of Histology and Embryology: "Genetics."

Dr. R. A. McIntosh, head, Department of Medicine: Breeding Problems, with Special Reference to Trichomonas Infection in Cattle."

The motion picture "Livestock and Mankind" was shown as well as x-ray films of clinical diagnostic value in large and small animals.

s/WM. MOYNIHAN, *Secretary.*

Utah

State Association.—The fiftieth annual meeting of the Utah Veterinary Medical Association was held at Provo on June 24-25, 1949. The scientific program follows.

Dr. L. M. Hurt, then president of the AVMA, Los Angeles, Calif.: "Greetings from the AVMA" and "Recently Diagnosed Skin Diseases of Horses."

Dr. Lloyd C. Moss, Department of Medicine, Colorado A. & M. College, Fort Collins: "Report on AAHA Meeting" and "Encephalitic Distemper Syndrome."

Dr. J. E. McCoy, Department of Veterinary Medicine, State College of Washington, Pullman: "Digestive Disturbances of the Bovine Species" and "Trench Mouth in the Dog and Cat."

Dr. T. B. Keith, Department of Animal Husbandry, University of Washington, Moscow, Idaho: "Mineral Deficiency Symptoms in Cattle and Sheep" and "Some Nutritional Deficiencies of Swine."

Dr. John Gorham, Wildlife Department, State College of Washington, Pullman: "Common Diseases of the Mink."

Dr. D. M. Hammond, head, Department of Zoology, Utah State Agricultural College, Logan: "Bovine Trichomoniasis—Diagnosis and Treatment."

Dr. Wayne Binns, head, Department of Veterinary Science, Utah State Agricultural College, Logan: "Ring Test for Brucellosis."

Newly elected officers include Drs. Hugh Stevens, Lewiston, president; L. W. Jones, Provo, president-elect; Edward A. Tugaw, secretary-treasurer.

A new constitution, developed by Drs. W. H. Hendricks and Hugh Hurst was adopted. New practitioners in the state are Drs. Grant Boam, Salt Lake City; John Christianson, Wellsville; Elmer Gibson, Logan; R. E. Thomas, Vernal, and R. H. White, Cedar City, all graduates of Colorado A. & M. College; and Dr. A. E. Larsen, Kaysville, a Washington State College graduate.

s/EDWARD A. TUGAW, *Secretary.*

Washington

Conference for Veterinarians.—The annual conference for veterinarians of Washington State College was held June 15-17, 1949, at the College of Veterinary Medicine, Pullman. The program follows. Speakers not otherwise identified are from the staff of the College of Veterinary Medicine.

Dr. P. A. Klavano: "Demonstration of Circulatory Stimulants and Depressants."

Dr. Hadleigh Marsh, Agricultural Experiment Station, Bozeman, Mont.: "Sheep Production and Diseases in Australia" and "Coccidiosis in Range Calves."

Dr. C. M. Hamilton, Western Washington Experiment Station, Puyallup: "Newcastle Disease" and "Fowlpox."

Dr. C. R. Donham, Department of Veterinary Science, Purdue University, West Lafayette, Ind.: "Swine Diseases" and "Brucellosis."

Dr. E. C. Stone: "Rumen Physiology" (with illustrations).

Dr. Myron Thom, Pasadena, Calif.: "Canine Geriatrics" and "Radiology."

Dr. E. M. Gildow, Kirkland: "Diseases of Reproduction" and "Nutrition in Dogs."

Dr. L. H. Scrivner, Laramie, Wyo.: "Problems of the Turkey Industry."

The following departments presented demonstrations: anatomy, large animals, small animals, poultry, physiology and pharmacology, pathology and parasitology, clinical pathology, and bacteriology.

s/R. E. NICHOLS, *Dean.*

Wisconsin

Conference for Veterinarians.—The second annual postgraduate conference for veterinarians was held June 21-23, 1949, by the University of Wisconsin Department of Veterinary Science, Madison. Some of the subjects covered during the three-day conference were diseases of dairy cattle, fur animals, large and small animals, and poultry.

Chairman C. A. Brandly, Department of Veterinary Science, and 29 other faculty members were among the speakers, and participated in demonstrations in the clinic. Outside speakers included Drs. G. Bohstedt, Madison; A. G. Danks, University of Pennsylvania, Philadelphia; L. R. Davenport, Springfield, Ill.; A. A.

Erdmann, Madison; R. B. Hipenbecker, Fennimore; C. D. Lee, Ames, Iowa; J. O. McCoy, Reeseville; A. J. Noonan, Madison; C. H. Reading, Madison; W. H. Riser, Skokie, Ill.; J. T. Schwab, Madison; R. E. Shope (Ph.D.), Rahway, N. J.; R. H. Smith, Belleville; L. J. Steuber, Prairie du Sac; W. D. Stovall (M. D.), Madison; and F. W. Wilson, Mechanicsville, Iowa.

Those attending the conference enjoyed a banquet at the First Congregational Church the evening of June 22.

s/C. A. BRANDLY, *Chairman.*

FOREIGN NEWS

China

Anthrax in a Shanghai Zoo Garden Leopard.—On June 6, 1949, in the zoogarden of Fu-sing Park, Shanghai, a report of sudden death of a male leopard was reported. Postmortem examination showed the spleen greatly enlarged and pulpy. Smears and cultures from spleen pulp were teeming with pure culture of *Bacillus anthracis*. Possible evidence of the etiologic agent was traced to diseased beef fed and/or contaminated straw used for bedding.

s S. F. WU, *Director of Shanghai Municipal Abattoir.*

France

Leclainche Retires.—Professor Emanuele Leclainche (Alfort '82), 88 years old, has retired after fifty-seven years in the veterinary service of his country. He was the founder and the director of *L' Office Internationale des Epizoöties*, a livestock sanitary society devoted to the suppression of animal diseases in European countries. Veterinary officers of World War I will recall him as the chief veterinarian of France at the time of the American expedition. Executive, fluent author, teacher, research scientist, assiduous worker, and good friend, he became the best-known veterinarian of all times.

As director of OIE, he is succeeded by Professor Gaston Ramon, honorary director of the Pasteur Institute of Paris. Though his many works are too numerous to name here, it should be said that his "Animal Diseases Transmissible to Man" (1891) was the first complete work of the kind published, and his "History of Veterinary Medicine" (1934) the most comprehensive veterinary history ever written.

STATE BOARD EXAMINATIONS

Illinois.—The Veterinary Examining Board will hold examinations on Sept. 26-28, 1949, at the office of the State Department of Registration and Education, 160 N. La Salle St., Chicago. Applications must be obtained in advance from the Department of Registration and Education, State Capitol, Springfield, Ill. Dr. C. N. Bramer, chairman, Illinois State Veterinary Examining Board, 1021 Davis St., Evanston, Ill.

DEATHS

★**G. W. Famous** (UP '08), 63, Belmont, Mass., died on July 11, 1949. Dr. Famous was a member of the National Association of BAI Veterinarians and of the AVMA since 1932.

★**Lester P. Gentry** (KCVC '05), 71, Ottawa, Kan., died on June 14, 1949. Dr. Gentry was an honorary member of the Kansas Veterinary Medical Association and a member of the AVMA since 1928.

★**F. N. Marcellus** (OVC '25), 64, Guelph, Ont., died early in March, 1949. Dr. Marcellus was a member of the Ontario Veterinary Association, the Poultry Science Association, the World's Poultry Science Association, the Canadian Society of Technical Agriculturists, and of the AVMA since 1943.

Frank Erskine Murray (OSU '92), 81, Salt Lake City, Utah, died at his home on July 23, 1949. Former inspector in charge of the U.S. Bureau of Animal Industry, Dr. Murray directed research which led to the discovery of "big head" in sheep, and led campaigns to eradicate bovine tuberculosis and sheep scab in the intermountain area. He instituted the brucellosis-eradication program in the intermountain area and then directed the campaign in Utah. Dr. Murray was instrumental in organizing the Intermountain Livestock Sanitary Association and served as its president. He retired as head of the Salt Lake City Bureau of Animal Industry office in 1938.

★**Garnet Hunter Oliver** (CVC '12), 65, Denver, Colo., died on April 12, 1949. Dr. Oliver was admitted to the AVMA in 1939.

Jasper Scott Potter (CVC '92), 81, Iowa City, Iowa, died on June 27, 1949, after a lingering illness. He had been a member of the AVMA and was a member of the Eastern, East Central, and Southern Iowa veterinary medical associations.

★**Henry M. Schultz** (Mc K '04), 72, Missoula, Mont., died on April 28, 1949. Dr. Schultz was a member of the Montana Veterinary Medical Association and of the AVMA.

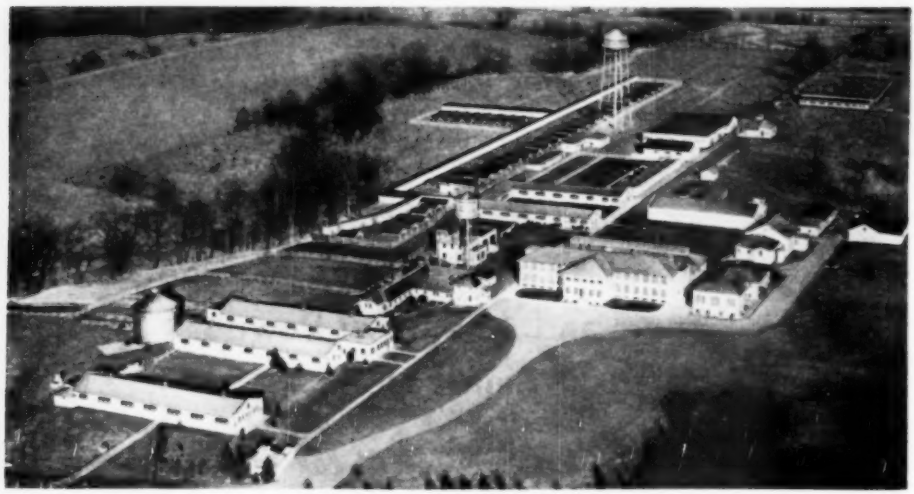
C. P. Sneed (KCVC '09), Ralston, Neb., died July, 1927.

★**W. J. Stone** (KCVC '16), 66, Dallas, Texas, died on May 4, 1949. Dr. Stone was a member of the Missouri Veterinary Medical Association and was admitted to the AVMA in 1931.

★Indicates member of the AVMA.

An' Related Topics

Pitman-Moore Celebrates Its Golden Anniversary



Pitman-Moore plant at Zionsville, Ind.

In announcing the golden anniversary of Pitman-Moore Company (July 1, 1949), President Kenneth F. Valentine stated that it was on July 1, 1899, that Pitman-Moore Company first opened for business (under the name of Pitman-Myers Co.) in the small, rented quarters in the then little city of Indianapolis. The company now occupies 143,000 sq. ft. in downtown Indianapolis, housing offices and laboratories for pharmaceutical production.

Pitman-Moore also operates one of the world's largest biological plants on an 80-acre tract in Zionsville, Ind. Only recently, a 160-acre farm near the biological plant has been converted into laboratories for research on both human and animal health problems.

Among the veterinary products of Pitman-Moore are such outstanding small animal biological products as Virogen; a complete line of large animal biological products; and many widely used specialties, including parenteral solutions Di-Sulfalac and Di-Sulfalac Stronger; Cerbinol, Masticillin, Amfetasul; and the newly introduced development of Pitman-Moore research—Vermiplex, a canine anthelmintic safe for routine administration even to puppies and effective against ascarids, hookworms, and the common canine tapeworms.

COMING MEETINGS

Georgia Coastal Plain Experiment Station. Annual short course for veterinarians. Coastal Plain Experiment Station, Tifton, Ga., Sept. 12-13, 1949. Wm. L. Sippel, Georgia Coastal Plain Experiment Station, Tifton, Ga.

Virginia Veterinary Medical Association. Fall meeting. Cavalier Hotel, Virginia Beach, Va., Sept. 12-14, 1949. H. K. Royer, Lynchburg, Va., secretary.

Mississippi, Northeast Veterinary Medical Association. Annual clinic. Corinth, Miss., Sept. 13, 1949. Price S. Livingston, New Albany, Miss., secretary.

Tennessee, University of, College of Agriculture. Short course for veterinarians, University of Tennessee, Knoxville, Sept. 15-16, 1949. Dennis Sikes, Department of Veterinary Science, University of Tennessee, College of Agriculture, Knoxville, Tenn.

Northern Illinois Veterinary Medical Association. Fall meeting. Faust Hotel, Rockford, Ill., Sept. 28, 1949. A. A. Legner, Sandwich, Ill., secretary.

(Continued on page 28)

Now Available

BACITRACIN

CSC

for Veterinary Use

An entirely new antibiotic in the veterinary field, Bacitracin-C.S.C. offers great promise in the topical treatment of many surface infections and infected wounds in animals. Bacitracin is effective against a wide spectrum of pathogens, many of which abound in pyogenic lesions of animals. It is administered by local infiltration directly into and around the lesion, or it is applied by means of an ointment directly onto infected ulcers and other open wounds. Rapidity of action and an extremely low index of allergenicity are distinctive advantages of this new antibiotic. Bacitracin should not be administered intramuscularly for systemic action.

Veterinary surgeons are invited to write for literature describing the action and uses of both Bacitracin-C.S.C. (in vials) and Bacitracin Ointment-C.S.C.

Vials

Bacitracin-C.S.C. is supplied in 20 cc. rubber-stoppered vials containing 10,000 units. The optimal concentration for local infiltration is 500 units per cc.

Ointment

Bacitracin Ointment-C.S.C., containing 500 units per Gm., is available in 1 oz. tubes.

C.S.C. Pharmaceuticals

A DIVISION OF COMMERCIAL SOLVENTS CORPORATION, 17 EAST 42ND STREET, NEW YORK 17, NEW YORK

(Continued from page 26)

Colorado State Veterinary Medical Association. Annual meeting. Shirley Savoy Hotel, Denver, Colo., Sept. 29-30, 1949. W. P. Blake, 2410 8th Ave., Greeley, Colo., secretary.

South Dakota Veterinary Medical Association. Annual meeting. Sioux Falls, S. Dak., Oct. 5-6, 1949. R. M. Scott, 1501 S. Maine Ave., Sioux Falls, S. Dak., secretary.

Pennsylvania State Veterinary Medical Association. Annual meeting. Bedford Springs Hotel, Bedford Springs, Pa., Oct. 5-7, 1949. Raymond C. Snyder, Walnut St. and Copley Rd., Upper Darby, Pa., secretary.

Purdue University. Annual short course for veterinarians. Department of Veterinary Science, Lafayette, Ind., Oct. 5-7, 1949. C. R. Donham, head, Department of Veterinary Science, Purdue University, Lafayette, Ind.

Chief Livestock Sanitary Officials. National Assembly. The Neil House, Columbus, Ohio, Oct. 10-11, 1949. Dr. C. F. Clark, State Office Building, Lansing 13, Mich., secretary.

United States Livestock Sanitary Association. Annual meeting. The Neil House, Columbus, Ohio, Oct. 12-14, 1949. Dr. R. A. Hendershott, 1 West State St., Trenton 8, N. J., secretary.

New England Veterinary Medical Association. Annual meeting. Poland Spring House, Poland Spring, Maine, Oct. 18-19, 1949. A. E. Coombs, 15 Elm St., Skowhegan, Maine, president.

Iowa, Eastern Veterinary Medical Society. Annual meeting. Hotel Montrose, Cedar Rapids, Oct. 20-21, 1949. Laurance P. Scott, P. O. Box 325, Waterloo, Iowa, secretary.

Florida State Veterinary Medical Association. Annual meeting. Hotel George Washington, Jacksonville, Fla., Oct. 23-25. 1949. V. L. Bruns, Box 623, Williston, Fla., secretary.

Association of Land-Grant Colleges and Universities. Division of Veterinary Medicine. Kansas City, Mo., Oct 24-27, 1949. W. A. Hagan, 320 The Parkway, Ithaca, N.Y., chairman.

American Public Health Association. Annual meeting. Hotels Statler and New Yorker, New York City, Oct. 24-28, 1949. Dr. Reginald Atwater, American Public Health Association, 1790 Broadway, New York, N. Y., executive secretary.

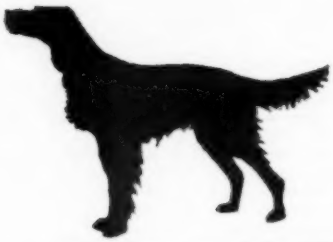
Interstate Veterinary Medical Association. Annual meeting. Martin Hotel, Sioux City, Iowa, Oct. 27-28, 1949. H. C. Smith, Sioux City, Iowa, secretary.

Mississippi Valley Veterinary Medical Association. Annual fall meeting. Pere Marquette Hotel, Peoria, Ill., Nov. 2-3, 1949. R. J. Kirkpatrick, 1235 N. Henderson St., Galesburg, Ill., secretary.

Southern Veterinary Medical Association. Annual meeting. Thomas Jefferson Hotel, Birmingham, Ala., Nov. 7-9, 1949. A. A. Husman, 320 Agricultural Bldg., Raleigh, N. Car., secretary.

(Continued on page 30)

over ½ Million Dogs...



Over half a million dogs have been vaccinated with Distemperoid — (Ferret Origin, Green Method).

The efficacy of FROMM Distemperoid as a prophylactic and therapeutic agent has been proved beyond question by field tests and countless investigations. Being a living modified virus, it produces a solid, lasting immunity.

Distemperoid has an assured viability of six months. Use it as a defense against distemper. It can be administered *with confidence.*

- ***Sold only to qualified Graduate Veterinarians***
- ***Supplied in single-dose and 10-dose packages***

FROMM
CANINE
DISTEMPER
VACCINE

FROMM LABORATORIES, INC.
Grafton, Wisconsin, U. S. A.
Telephone Cedarburg 811

sole distributors:
WINTHROP-STEARNS, INC.
170 VARICK STREET
NEW YORK 13, NEW YORK

- ***Send for your FREE booklet***
"Treatment and Prevention of Distemper"

(Continued from page 28)

Illinois Veterinarians and Public Health Officers. Joint meeting. Hotel Abraham Lincoln, Springfield, Ill., Nov. 16-17, 1949. L. R. Davenport, Illinois Department of Public Health, Springfield, Ill., consultant in veterinary medicine.

Nebraska State Veterinary Medical Association. Annual meeting. Cornhusker Hotel, Lincoln, Neb., Dec. 7-9, 1949. L. V. Skidmore, College of Agriculture, Lincoln 1, Neb., secretary.

Ohio State Veterinary Medical Association. Annual meeting. The Deshler-Wallick Hotel, Columbus, Jan. 4-6, 1950. F. J. Kingma, 121 E. Weber Rd., Columbus 2, Ohio.

Oklahoma Veterinary Medical Association. Annual meeting. Jan. 9-10, 1950. Lewis H. Moe, 408 Life Sciences Bldg., Oklahoma A. & M. College, Stillwater, Okla., secretary.

Indiana Veterinary Medical Association. Annual meeting. Severin Hotel, Indianapolis, Ind., Jan. 12-14, 1950. W. W. Garverick, Zionsville, Ind., secretary.

Tri-State (Arkansas, Mississippi, Tennessee) Veterinary Conference. Peabody Hotel, Memphis, Tenn., Jan. 16-17, 1950. H. W. Nance, Lawrenceburg, Tenn., secretary.

North Carolina State College of Agriculture. Annual veterinary conference. State College of Agriculture, Raleigh, Jan. 24-27, 1950. C. D. Grinnells, State College of Agriculture, Raleigh, N. Car., chairman.

Michigan State College, School of Veterinary Medicine. Annual postgraduate conference for veterinarians. Michigan State College, Jan. 25-26, 1950. C. S. Bryan, Michigan State College, East Lansing, Mich., dean.

Illinois State Veterinary Medical Association. Annual meeting. Pere Marquette Hotel, Peoria, Ill., Feb. 1-3, 1950. A. G. Misener, 6448 Clark St., Chicago 26, Ill., secretary.

• • •

Regularly Scheduled Meetings

Bay Counties Veterinary Medical Association, the second Tuesday of each month. George E. Martin, 530 Stockton Ave., San José, Calif., secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. Thomas Eville, Route 1, Box 136H, Fresno, Calif., secretary.

Chicago Veterinary Medical Association, the second Tuesday of each month. Robert C. Glover, 1021 Davis St., Evanston, Ill., secretary.

East Bay Veterinary Medical Association, bimonthly, the fourth Wednesday. O. A. Soave, 5666 Telegraph, Oakland, Calif., secretary.

Greater St. Louis Veterinary Medical Association, Ralston-Purina Research Building, St. Louis, Mo., the first Friday in February, April, June, and November. W. C. Schofield, Dept. of Animal Pathology, Ralston-Purina Co., St. Louis 2, Mo., secretary.

Houston Veterinary Medical Association, Houston, Texas, the first Thursday of each month. Edward Lepon, Houston, Texas, secretary-treasurer.

(Continued on page 32)

(Continued from page 30)

Illinois Valley Veterinary Medical Association, the second Wednesday of even-numbered months. R. A. Case, 400 S. Garden St., Peoria, Ill., secretary.

Indiana Tenth District Veterinary Medical Association, the third Tuesday of each month. J. J. Arnold, Box 144, New Castle, Ind.

Jefferson County Veterinary Society, Louisville, Ky., the first Wednesday evening of each month. F. M. Kearns, 3622 Frankfort Ave., Louisville 7, Ky., secretary.

Keystone Veterinary Medical Association. School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa., the fourth Wednesday of each month. Raymond C. Snyder, N. W. Cor. Walnut St. and Copley Rd., Upper Darby, Pa., secretary.

Massachusetts Veterinary Association. Hotel Statler, Boston, Mass., the fourth Wednesday of each month. C. L. Blakely, Angell Memorial Animal Hospital, 180 Longwood Ave., Boston, Mass., secretary-treasurer.

Michiana Veterinary Medical Association. Hotel Elkhart, Elkhart, Ind., 7:00 p.m., the second Thursday of each month. R. W. Worley, 3224 Lincoln Way West, South Bend, Ind., secretary.

Michigan, Southeastern Veterinary Medical Society. Herman Kiefer Hospital, Detroit, Mich., the second Wednesday of each month from October through May.

Milwaukee Veterinary Medical Association. Wisconsin Humane Society, 4150 N. Humbolt Ave., Milwaukee, Wis., the third Tuesday of each month. Kenneth G. Nicholson, 2161 N. Farwell Ave., Milwaukee, Wis., secretary.

New York City Veterinary Medical Association. Hotel Pennsylvania, New York, N. Y., the first Wednesday of each month. C. R. Schroeder, Lederle Laboratories, Inc., Pearl River, N. Y., secretary.

Northern San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month. I. N. Bohlender, Box 588, Turlock, Calif., secretary.

Orange Belt Veterinary Medical Association, the second Monday of each month. James R. Ketchersid, 666 East Highland Avenue, San Bernardino, Calif., secretary.

Peninsula Veterinary Medical Association, the third Monday of each month. E. W. Paul, Box 866, Redwood City, Calif., secretary.

Redwood Empire Veterinary Medical Association, the second Tuesday of every other month. Charles D. Stafford, Novato, Calif., secretary.

Sacramento Valley Veterinary Medical Association, the fourth Friday of each month. R. C. Goulding, 11511 Capitol Avenue, Sacramento, Calif., secretary.

San Diego County Veterinary Medical Association, the fourth Tuesday of each month. R. J. McFarland, 3621 Jewell St., San Diego 9, Calif., secretary.

Southern California Veterinary Medical Association, the third Wednesday of each month. D. H. McDole, 8674 Melrose Ave., Los Angeles 46, secretary.

CLASSIFIED ADVERTISEMENTS

Twenty-five words or less, $2.50; 8 cents for each additional word. Replies sent in care of the Journal, 25 cents extra.
Remittance must accompany order.

Deadline for want ads 15th of month preceding date of issue.

Names of classified advertisers using key letters cannot be supplied. Address your reply to the key letters, c/o JOURNAL of the AVMA, 600 So. Michigan Ave., Chicago 5, Ill., and it will be transmitted to the advertiser.

Wanted—Positions

Young man, 22, 6'3", 190 lb., one year Colorado A. & M., four years' dairy and general farm experience, wishes work as assistant to veterinarian specializing in large animals, prior to entering veterinary school in fall of 1951. Wisconsin preferred. Address Herbert J. de Marrais, P. O. Box 97, Oradell, N. J.

Assistantship in mixed or small animal practice wanted by recently graduated veterinarian. Married, 1 child, available immediately. Has Kansas license. Address "Box M 5," c/o Journal of the AVMA.

Veterinarian desires position as assistant, laboratory worker, or meat inspector. Graduate of a veterinary academy in Hannover, Germany. Speaks German, Polish, Lithuanian, and some English. Address Dr. F. Gliaudelis, 164 Sumpter St., Brooklyn 33, N. Y.

Veterinarian from Europe wishes position as assistant to rural veterinarian or in research laboratory. Northeast preferable. Two years' experience mixed practice; three bacteriology. Address "Box M 8," c/o Journal of the AVMA.

British veterinarian, M.R.C.V.S, B.Sc. Agric., two years' experience with large and small animals, requires assistantship commencing October. Address G. A. Linton, 661 E. Olive Street, Long Beach, Long Island, N. Y.

Young, married Ontario graduate would like position, with view to eventual partnership, in small or mixed animal practice, preferably in Michigan, Ohio, Indiana, or New York. Address Dr. Alan J. Arthur, General Delivery, San Angelo, Texas.

Young graduate veterinarian, married, seeks permanent position with pharmaceutical, feeds, or allied concern. Some research experience. No objection to travel. Excellent references. Address "Box M 11," c/o Journal of the AVMA.

Recent graduate accredited Midwest university would like position as assistant to progressive small animal practitioner anywhere in United States. Thirty years old, married, keenly interested in small animal work. Address "Box M 21," c/o Journal of the AVMA.

Recent graduate of recognized college desires assistantship to veterinarian in small animal hospital.

(*Continued on page 36*)

(Continued from page 34)

Any reasonable offer acceptable. Address "Box M 16," c/o Journal of the AVMA.

Veterinarian, Latvian university graduate, 37, married, desires to work as assistant in mixed practice. Prefers Missouri, Arkansas, Oklahoma, or Tennessee. Address "Box M 14," c/o Journal of the AVMA.

1949 Michigan State graduate, woman, desires position in mixed or small animal practice. Some experience; excellent references; available immediately. Address "Box M 12," c/o Journal of the AVMA.

Wanted Practices

Graduate, experienced veterinarian wants to lease or buy active small animal or mixed practice in any state. Would prefer practice in Pennsylvania, New Jersey, Maryland, or Delaware. Give full details. Can settle suitable practice at once. Address "Box G 16," c/o Journal of the AVMA.

Wanted—Veterinarians

Veterinarian wanted immediately as assistant in exclusive small animal practice in western suburb of Chicago. Must be graduate of recognized veterinary college; experience not necessary; no car needed. Married man preferred; partially furnished 6-room apartment provided. Salary and commission. Address "Box M 1," c/o Journal of the AVMA.

SMALL ANIMAL ASSISTANT WANTED—prefer man with some experience and interested in eventual partnership or ownership in well-established hospital and practice. Located in large eastern city. Please state qualifications, age, etc. in first letter. Address "Box M 10," c/o Journal of the AVMA.

Graduate veterinarian of Midwest school wanted as assistant in mixed practice in Midwest. This opportunity can lead to a partnership or percentage terms for the right man. Address "Box M 3," c/o Journal of the AVMA.

Veterinarian wanted for teaching and research work. Western university. Salary depending on qualifications and experience. Address "Box M 4," c/o Journal of the AVMA.

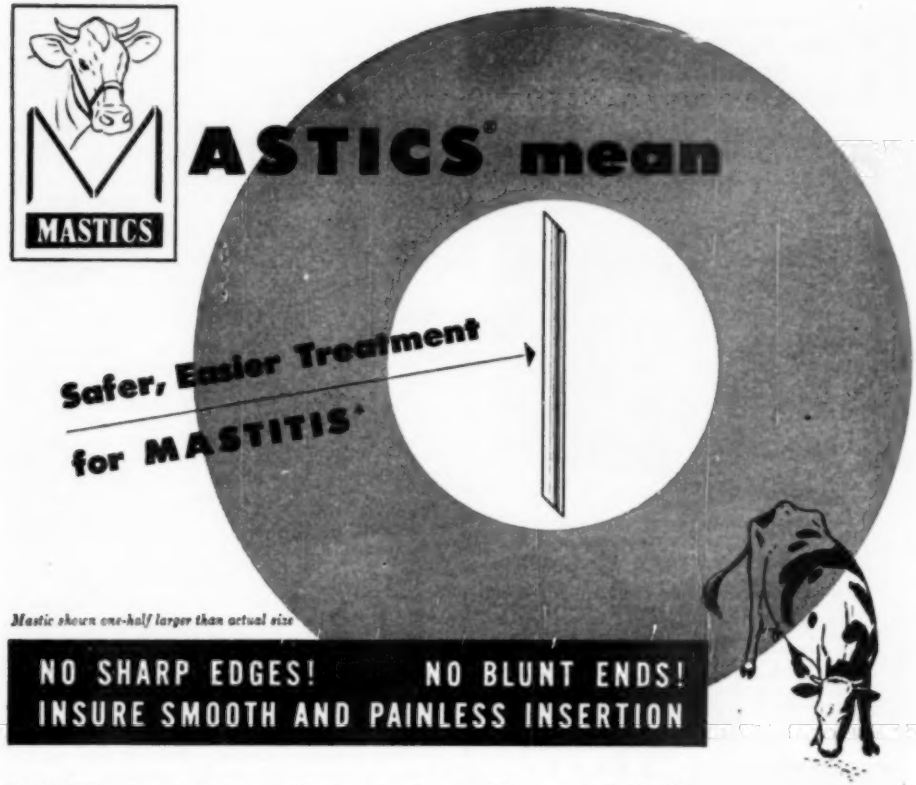
Veterinarian wanted as assistant in small animal hospital in Denver, Colo. Address "Box M 19," c/o Journal of the AVMA.

Experienced veterinarian wanted to take full charge of going small animal hospital, complete with living quarters. Excellent opportunity. Must have Connecticut license. Address "Box M 18," c/o Journal of the AVMA.

For Sale or Lease—Practices

FOR SALE—General practice, established over thirty years in county seat town of 2,000 in northeast Missouri. Annual gross over $22,000. Sixty per cent hog work. Wonderful opportunity for small animal work. Price of $17,500 includes newly remodeled home and hospital and complete stock of drugs. Guaranteed income from sale barn work over $10,000 annually. Reason for selling, other

(Continued on page 38)



MASTICS, the original penicillin bougies for mastitis, are individually fashioned in *seamless* molds. Only this method does away with sharp edges along the length of the bougie which may painfully injure the teat.

And MASTICS are the only bougie with special tapered ends—beveled to make insertion effortless and painless. Slightest pressure of thumb and finger gently eases the MASTIC through the sphincter into the streak canal.

Add to these unique features the convenience of MASTICS' ready-to-use foil-seal applicator and the fact that each dosage unit is entire and exact and you have *effective* penicillin therapy reduced to simplest terms.

Next time you write or visit your veterinary supply dealer, why not order several boxes of MASTICS in each strength? They are available as Regular Strength MASTICS (25,000 units Penicillin 'G') and High Potency MASTICS (100,000 units Penicillin 'G'). If your distributor cannot supply you, mail your order direct to us. All delivery charges prepaid if check is sent with order, otherwise C.O.D. plus charges.

*Caused by Strept. Agalactiae

Regular Strength MASTICS		*High Potency* MASTICS	
25's	$ 4.75	25's	$ 8.50
100's	18.00	100's	33.00

The Martin Laboratories
WEST CHESTER, PENNA.

(Continued from page 36)

business interests. Address "Box M 2," c/o Journal of the AVMA.

FOR SALE — Growing small animal hospital. Main thoroughfare in Los Angeles area. Modern, well equipped, ample drugs, 12 runs, x-ray, neon signs. No property involved; excellent long-term lease. Full price $11,000; $6,000 will handle. Address "Box F 6," c/o Journal of the AVMA.

FOR SALE — Completely equipped small animal hospital and office in uptown building. Excellent mixed practice in best dairy country. Everything in building to start work immediately. Priced at real estate and equipment value. $7,500, with terms. Address Joseph W. Kindig, agent, Nappanee, Ind.

FOR SALE — An exclusive, well-established small animal practice, gross potential unlimited, near large city in central New York, available on account of illness. Modern hospital and boarding kennel, one 2-family and one large single house, pet cemetery, ambulance, much extra land for expansion. With down payment of $15,000, entire property and business can be acquired in ten to twelve years. Present owner member A.A.H.A. State full particulars first letter. A real opportunity. Correspondence confidential. Address "Box M 9," c/o Journal of the AVMA.

FOR SALE — Lease and practice of newly established dog and cat clinic in 3-room street apartment, with or without equipment and furniture. Address Aachen Veterinary Clinic, 566 Eagle Avenue, Bronx 55, N. Y. Phone Cypress 2-7162.

PRACTICE FOR SALE — No real estate involved: established three years; small animals only. Gross $10,000 yearly. Five-room apartment above hospital. Selling for actual cost of equipment and drugs. Long or short term lease available. Price $2,000; one-half down, balance in 12 monthly payments. Excellent opportunity for veterinarian with low capital desiring practice. Must leave, due to other business interests, by September 23. If interested, contact immediately. Located in large northern Ohio city. Address Dr. J. P. Richards, 2129 Monroe Street, Toledo 2, Ohio.

FOR SALE OR LEASE — Mixed practice in southeastern city of 100,000. Small down payment required. Large 5-room apartment over hospital. All modern. Pictures on request. This is a fine opportunity for one wishing to operate a mixed practice. Address "Box M 20," c/o Journal of the AVMA.

FOR SALE — Mixed practice in central Michigan. Pleasant small town. $8,000 includes 8-room house, 3-room office attached, and complete drugs and instruments. Good reason for selling. Practice established thirty-five years. Address "Box M 15," c/o Journal of the AVMA.

FOR SALE — Mixed practice in rich livestock area of Illinois. Population 50,000. No real estate. Priced right at one Year's net income. Wonderful opportunity. Address "Box M 22," c/o Journal of the AVMA.

FOR SALE OR LEASE — Well-established small animal hospital, most modern facilities and living quarters. Will lease with option to buy. Good future for capable man. Lower Connecticut. Address "Box M 17," c/o Journal of the AVMA.

(Continued on page 40)

(Continued from page 38)

FOR SALE — Outstanding small animal practice with excellent possibilities for large animal practice if desired. Modern, fully equipped hospital, with small detached house and garage in rear. In new business district in rapidly growing central California city. Annual gross $17,000. Terms, $15,000 down. Owner retiring after forty-five years' practice. Address "Box M 7," c/o Journal of the AVMA.

FOR SALE — Modern small animal practice in residential suburb of large Ohio city. Capacity 73 dogs, including equipment, furniture, drugs, as well as completely stocked pet furnishing shop. Established over thirty years. Priced less than annual gross of practice. Address "Box M 6," c/o Journal of the AVMA.

FOR SALE OR LEASE — Modern small animal hospital with living quarters and fully equipped. Grossed $12,000 last year, $1,500 last month. $1,500 down for property, equipment, and practice; or will lease for $120 per month. Located in suburb of large Ohio city. Address "Box M 12," c/o Journal of the AVMA.

For Sale—Miscellaneous

FOR SALE — At saving of $200. Floor sample. Universal Fieldmaster Portable X-Ray Unit # U-3114 25 Ma. and 85 P.K.V., consisting of head, control, demountable stand, foot switch, and timer. Value $618, our price $418, F.O.B., Philadelphia, Pa. Offered subject to prior sale. Surgical Supply Service, 825 Walnut Street, Philadelphia 7, Pa.

FOR SALE — X-Ray, G.E. portable, F-3. Very little used, like new. $400. Address Dr. L. E. Rosen, 6966 Ogontz Ave., Philadelphia 38, Pa.

FOR SALE — Picker Army X-Ray, new mobile type; complete, $975.00. Address A. H. Smullian and Co., 680 Washington St., S. W., Atlanta, Ga.

Books and Magazines

Hospital building problems? Rev. 4th ed. Judy's Kennel Building and Plans, $3. Many suggestions, layouts, much data. Keep up on dogs—Dog World $3 yr., 2 yrs. $5. Judy Publishing Co., 3323 Michigan Blvd., Chicago 16.

For Sale—Artificial Insemination Supplies

ARTIFICIAL INSEMINATION INSTRUMENTS — Essential equipment, replacement parts and materials, designed and manufactured especially for artificial insemination. Prompt delivery. New catalog. Address: Breeder's Equipment Co., Flourtown, Pa.

Stilbestrol reportedly gives important results in the treatment of mumps (contagious parotitis). It prevents and relieves the orchitis and ovaritis commonly occurring in adult subjects. This grave complication being less frequent in children gave birth to the thought that putting the gonads back to their prepuberty state explains the helpful action. Mumps do not occur in animals.

CONDITION YOUR HUNTERS WITH LARRO

Owners of hunting dogs praise the conditioning power of Larro Dog Food. So do veterinarians, kennelmen, and trainers.

Larro develops stamina and staying power. Larro-fed hunters reach top condition rapidly and *hold it!* For Larro Dog Food supplies *full nutrient balance*—so effectively that a dog needs no other food to maintain a high degree of well being. Yet Larro is formulated so that it can be fed with meat, meat scraps, gravies and vegetables if you prefer.

If you want to give your dog the food that will enable him to do his best in the field—start now to condition him with Larro. Buy from your nearest Larro Feed Dealer, or write us.

General Mills

Larro

DOG FOOD

CUBES OR MEAL

Address Dept. 61 • DETROIT 2 • SAN FRANCISCO 6 • CHICAGO 4

Notice to Contributors

Journal of the AVMA

and the

American Journal of Veterinary Research

Exclusive Publication.—Articles submitted for publication are accepted with the understanding that they are not submitted to other journals.

Manuscripts.—Manuscripts must be typewritten, double-spaced, and the original, not the carbon copy, submitted. One-inch margins should be allowed on the sides, with 2 in. at top and bottom. Articles should be concise and to the point. Short, simple sentences are clearer and more forceful than long, complex ones. Footnotes and bibliographies **also** should be typed **double space** and should be prepared in the following style: name of author, title of article, name of periodical with volume, month (day of month, if weekly), and year.

Illustrations.—Photographs should be furnished in glossy prints, and of a size that will fit into the Journals with a minimum of reduction. Photomicrographs which cannot be reduced should be marked for cropping to 1-column or 2-column width. Drawings should be made clearly and accurately in India ink on white paper. Figures appearing on graphs or charts should be large enough to allow for reduction necessary for the chart or graph to fit on Journal pages. All illustrations should bear the name of the author on the back.

Tables.—Tables should be simple. Complex tables are not conductive to perusal. It is wiser to summarize complex material rather than to attempt to tabulate it.

News.—Secretaries of associations and readers are requested to send us announcements of meetings and news items.

Anonymous Letters.—Anonymous communications, of whatever nature or purpose, to the JOURNAL or to the Association will not be published or referred for consideration to any Association official or committee.

AMERICAN VETERINARY MEDICAL ASSOCIATION

600 So. Michigan Avenue

Chicago 5, Illinois

Camolliens Lotion

in nonparasitic skin diseases in dogs and cats

- Anesthetic
- Mildly Astringent
- Stable

Camolliens* Lotion is an *improved* calamine preparation—applicable in veterinary dermatology, and especially useful in treating dogs and cats.

Camolliens Lotion contains:

Prepared Calamine	5%
Zinc Oxide	5%
Benzocaine	1%
Myristyl-gamma-picolinium Chloride	1:1000
Alcohol	8%

Camolliens Lotion contains *benzocaine* in place of the usual camphorphenol contained in the ordinary calamine lotion; this provides a pronounced antipruritic action.

Camolliens Lotion forms a stable suspension, adheres to the skin surface, and does not tend to flake or dust off.

Camolliens Lotion is pleasantly scented which adds to its value as a dispensing item in such conditions as nonparasitic dermatitis, summer eczema, interdigital eczema, and certain forms of ear canker.

Available in 4 oz., pint, and gallon bottles.

Write for the Camolliens leaflet.

* *Trademark, Reg. U. S. Pat. Off.*

the pharmaceuticals since 1886

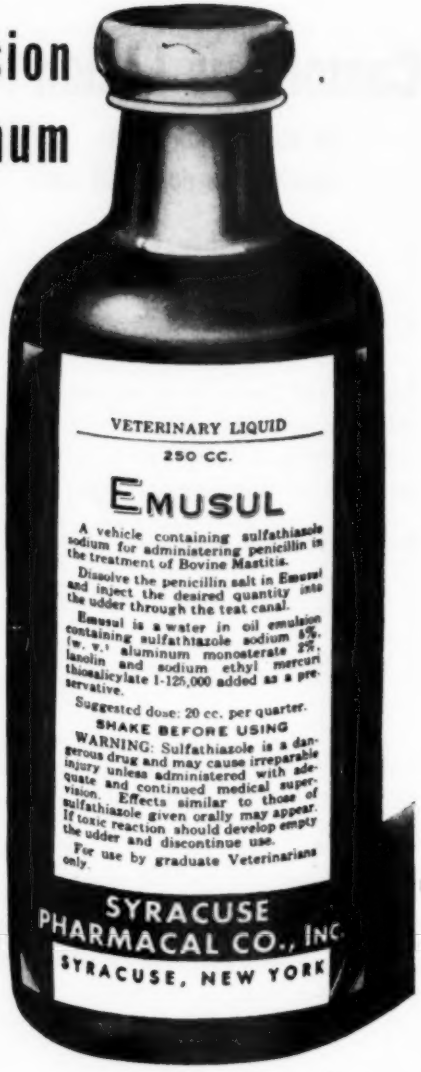
Upjohn

KALAMAZOO 99, MICHIGAN

DEPARTMENT OF VETERINARY MEDICINE

ATLANTA • BOSTON • CHICAGO • CLEVELAND • DALLAS • KALAMAZOO • KANSAS CITY • LOS ANGELES • MEMPHIS • MINNEAPOLIS • NEW YORK • PORTLAND • SAN FRANCISCO • TORONTO, ONTARIO

a water-in-oil emulsion of lanolin and aluminum monostearate with sodium sulfathiazole



Thoroughly tested and widely accepted as a vehicle for administering penicillin in the treatment of bovine mastitis.

For quicker results, dissolve penicillin salt in ½ to 1 cc. of sterile water, emulsify with EMUSUL and inject through the teat canal.

NOW AVAILABLE IN 100 cc. VIALS
1 Case 12 x 100 cc. vials.... .90 per vial

Single 250 cc. vials.....	2.00 per vial
1 Case 6 x 250 cc. vials....	1.80 per vial
2 Cases 6 x 250 cc. vials...	1.78 per vial

as trustworthy as time itself

SYRACUSE PHARMACAL COMPANY, INC.

211-215 WOLF STREET. SYRACUSE 8. N. Y.

OXYCEL®
A New Aid to the Veterinary Surgeon

OXYCEL (oxidized cellulose, Parke, Davis & Company) is a hemostatic and absorbable surgical packing that stops oozing hemorrhages and bleeding not readily controllable by clamp or ligature. It is utilized by direct application to bleeding areas.

OXYCEL resembles surgical gauze and cotton in physical appearance, but in clinical use its unique advantages over non-hemostatic and unabsorbable packings are emphatically obvious. Widely useful as a sterile surgical packing for control of hemorrhage, OXYCEL may be permitted to remain in open or closed wounds and body cavities with assurance of absorption without clinically significant tissue irritation.

OXYCEL is supplied in sterile gauze-type and cotton-type forms as pads, strips, and pledgets in individual glass vials and boxes of 12 vials.

DESCRIPTIVE LITERATURE AVAILABLE ON REQUEST

Dept. of Veterinary Medicine

PARKE, DAVIS & CO.

DETROIT 32, MICHIGAN

On farms having a history of tetanus, it is always advisable to give tetanus antitoxin to knife-castrated pigs and lambs.—*Vet. Col. in Successful Farming, June,* 1949.

Special Youth Awards Announced by Gaines Dog Research Center

To encourage greater participation by young people in organized dog activities, the Gaines Dog Research Center, New York City, has announced four special awards for boys and girls.

The awards, to be made on a national basis, will go to two boys and two girls under 18 years of age, each of whom has done noteworthy work with dogs, either in dog shows or field trials. There will be four titles: Girl Show-Dog Fancier of the Year, Boy Show-Dog Fancier of the Year, Boy Field-Dog Fancier of the Year, and Girl Field-Dog Fancier of the Year. In addition to the title, each winner will be presented with $100.

The winners will be selected by two groups of prominent show-dog and field-dog personalities, from nominations submitted to the Gaines Dog Research Center, 250 Park Avenue, New York 17, N. Y., up to Jan. 10, 1950. Anyone may make a nomination, which should give the youngster's day and year of birth and include all the facts about the youngster's accomplishment that will enable the committee members to pass fair judgment. The judges will weigh principally the youngster's 1949 dog activities but will be free to take earlier activities into consideration as well.

There's LEAN, RED MEAT* in KEN-L-RATION

It Says So On The Label

INGREDIENTS: Water, HORSE MEAT, Ground Horse Bone, Soya Grits, Oatmeal, Wheat Products (Cracked Wheat, Wheat Gray Shorts, Wheat Bran), Cracked Barley, Horse Meat By-[illegible] 3.2%, Salt 0.5%, Primary Dried Yeast 0.18%, Irradiated 7-Dehydrocholesterol [illegible]%, Onion and Garlic Powder for flavoring, Sodium Nitrite 0.0045%, Carotene 0.003%.

MANUFACTURED BY The Quaker Oats Company CHICAGO, ILL., U.S.A.

Look for this U. S. Government Seal of Inspection on every can of KEN-L-RATION

Fortified With Vitamins and Minerals, Too!

*When you recommend KEN-L-RATION, you are sure it is a dog food that gives sound nutrition. As it says on the label, every can contains lean, red meat—choice cuts of U. S. Government Inspected horse meat. This famous food also contains all vitamins, minerals and other elements known to be essential for dogs. Extensive kennel tests and the experience of many leading veterinarians prove that dogs of all breeds thrive on KEN-L-RATION. You can recommend it with confidence to dog owners.

KEN-L-RATION

The Quaker Oats Company
Ken-L-Products Division
Chicago, Illinois

In Baseball Chatter, 2000 A.D.—Once upon a time, *Texas fever* was a home run; *Bang's disease*, a three-bagger; *Newcastle disease*, a two-base hit; *Carré's disease*, a single; and *Dorset's disease*, a strike out. *Rocky Mountain fever* was none of our business. These eponymous diseases were remarkable for longevity.

United States livestock breeders imported 49,123 purebred animals in 1948—an increase of 40 per cent over 1947.—*U.S. Bureau of Animal Industry.*

At the North American Wildlife Conference in March, which was attended by 1,150 conservationists and sportsmen, mankind was chided for not having domesticated any animals since the beginning of history. Someone should have told the Conference about the turkey which was domesticated in North America—to be exact, by the Mayan population of Mexico, not the pioneers of New England, who killed off the wild turkeys.

You're Right, Doctor . . .

CANINE CRYSTOIDS®

ANTHELMINTIC

Really are EFFECTIVE and SAFE!

Yes, Canine CRYSTOIDS Anthelmintic are probably the safest and most effective of the anthelmintics . . . because each pill contains 0.2 Gm. CAPROKOL hexylresorcinol, clinically established as unusually safe and effective in the treatment of both round worm (Ascaris) and hookworm infestations in dogs.

Canine CRYSTOIDS Anthelmintic are characterized by these four clinical conclusions:

1. A single therapeutic dose, properly given, is from 90 to 100 per cent efficient.
2. The toxicity of the drug is clinically negligible. It is *free from after-effects.*
3. It is efficient against *both* Ascaris and hookworm infestations.
4. The action is *vermicidal.* The worms are killed outright—not merely stupefied—and consequently the danger of migration is obviated.

Supplied in packages of 5 and 100 pills, and in economical hospital packages of 500 pills. *Dosage:* 1 pill for very small puppies of smaller breeds, 2 pills for those of larger breeds. Dogs weighing 20 pounds or over, 5 pills.

VETERINARY DIVISION **SHARP & DOHME** PHILADELPHIA 1, PA.

BRANCHES: Atlanta, Baltimore, New York, Denver, Memphis, Los Angeles, Columbus, Boston, Chicago, Portland, San Francisco, Kansas City, Dallas, St. Louis, New Orleans, Minneapolis.

What Makes Buzzie write Like tH is?

BUZZIE is just learning to write.

And every line he writes starts out with big letters and ends up with little ones.

The trouble is, he doesn't plan ahead. He concentrates on making those big letters, and lets the end of the line take care of itself.

Many grownups have the same trouble—not with their handwriting, but their money.

They blow it all at the beginning, and let the "end of the line" take care of itself. But it practically never does.

That's why the Payroll Savings Plan and the Bond-A-Month Plan are such a blessing. They are "human-nature-proof."

When you're on one of these plans, the saving is done *for* you—automatically.

And remember, every U. S. Saving Bond you buy brings you $4 in ten years for every $3 invested.

So don't let your life run on like Buzzie's handwriting. Fix up the "end of the line" once and for all by signing up today for the Payroll Savings Plan—or, if you are not on a payroll, the Bond-A-Month Plan at your bank.

Automatic saving is sure saving – U.S. Savings Bonds

Contributed by this magazine in co-operation with the Magazine Publishers of America as a public service.

"Shipping Fever" Losses Can Be Controlled

The seasonal cattle movements, from grass to feedlot, shows, and slaes, are at hand.

The No. 1 problem, "shipping fever", can be handled the most efficiently and in the most practical manner by the administration of relatively small doses of

ANTI-HEMORRHAGIC SEPTICEMIA SERUM (Lockhart)

1. Immediately before shipment of cattle, inject Anti-Hemorrhagic Septicemia Serum (Lockhart). Dosage: 8 to 10 cc. per hundred pounds of weight.
2. When it is not possible to make injections before shipment of cattle, the administration of 12 to 15 cc. of serum per hundred pounds weight, during or immediately after shipment, produces equally as good results as the above.
3. In some districts and in some seasons, diphtheroid organisms play an important part in the "shipping fever" complex. Under such conditions

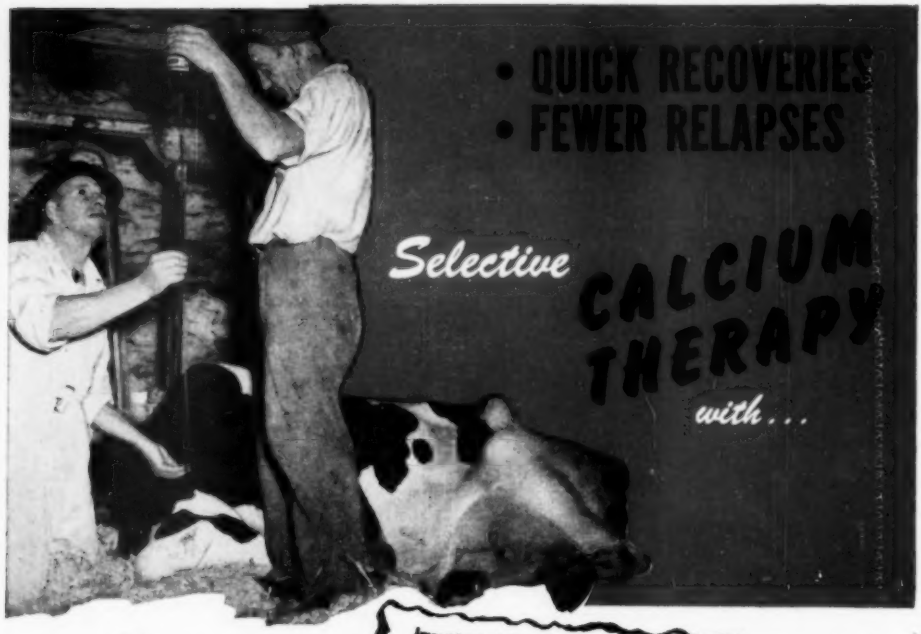
ANTI-CORYNEBACTERIUM PASTEURELLA SERUM (Lockhart)

should be used in place of above.

Lockhart Anti-Hemorrhagic Septicemia Serum and Anti-Corynebacterium Pasteurella Serum are produced from mature bovines known to be immune to the various "shipping fevers." In our opinion, this "Plus Value" accounts for the superiority of the results obtained from their use.

ASHE LOCKHART, INC.

800 Woodswether Road **Kansas City, Mo.**



SOLD TO VETERINARIANS ONLY

Important Advantage: Jen-Sal calcium solutions can be given safely by intramuscular, subcutaneous, intraperitoneal and intravenous injection . . . due to an exclusive Jen-Sal process which effectively controls the content of irritating ionized calcium.

Jen-Sal C·B·C

Product of choice in uncomplicated milk fever, acute rachitis or spasmophilia and eclampsia. Also in collateral treatment of the dermatoses, wasp and bee stings and as an antidote for DDT poisoning.

C.B.G. contains 25.7% Calcium Borogluconate made from organic source calcium under U. S. Patent.

500 cc. Bottles: 12—$8.00

Jen-Sal D·C·M

Product of choice in complicated milk fever, grass tetany, railroad sickness, wheat poisoning, acetonemia, forage poisonings, toxemia and in other syndromes with low blood levels of magnesium as well as calcium.

D.C.M. contains 18% Calcium Borogluconate, 6.5% Magnesium Borogluconate and 14% Dextrose with traces of phosphates.

500 cc. Bottles: 12—$8.40

CP-1

WRITE FOR QUANTITY DISCOUNTS

JENSEN-SALSBERY

KANSAS CITY, MISSOURI *Laboratories, Inc.*